PATENTS

FOR FARRIERY

PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

FARRIERY;

INCLUDING THE MEDICAL AND SURGICAL TREATMENT OF ANIMALS.

Part II.—A.D. 1867–1876.

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PREFACE.

This volume forms Part II. of the series of abridgments relating to "Farriery, including the Medical and Surgical "Treatment of Animals," and embraces the years 1867 to 1876; the First Part (which has already been published) containing the abridgments of the specifications from the earliest date to the end of the year 1866.

It should be borne in mind that the abridgments are merely intended to serve as guides to the specifications, which must themselves be consulted for minute details of any particular inventions. At the foot of each abridgment is stated the price at which a printed copy of the specification may be purchased at the Commissioners of Patents' Sale Department (38, Cursitor Street, Chancery Lane, E.C.) The volume is furnished with a copious index of subjects, and an index to the names of patentees and inventors.

This series includes the inventions relating to farriery, veterinary medicine, and the medical and surgical treatment of domesticated animals. Those connected with the manufacture or improvement of horse-shoes and horse-shoe nails form the staple of the book; but every surgical or medical appliance intended exclusively or specially for animals has been admitted. Inventions relating to clipping and singeing horses are of necessity included, and from the similarity of many of the inventions for clipping horses to those for shearing sheep it has been thought desirable to make the series complete as regards the last-mentioned subject also. It should be stated that many of the inventions described in the following pages as intended for horse-clipping are also applicable, according to the specifications, for the purposes of clipping and shearing animals generally. Improvements in harness, stable fittings, or the grooming of horses, have not been included; they will be found in the series entitled "Saddlery, Harness, Stable Fittings, &c." Medicated food is included.

H. READER LACK.

April, 1880.

INDEX OF NAMES.

[The names printed in *Italic* are those of the persons by whom the inventions have been communicated to the Applicants for Letters Patent.]

Page
Abel, C. D....1, 7
Adams, R....70
Adams, R....70
Adie, P....17, 143, 150, 176 (*App.*)
Adlam, S....3
Akers, W....3
Alden, A....103
Andrews, D. A....161
Ange, Count A. G. de St....112
Angelini, A....5
Angell, B. J....95
Aris, J. J....125
Arnold, J....91
Ashton, J....20
Atkinson, G. T....166
——, T....84

Bacq, F. le....125
Badiou, J. F. R....47
Baker, J. M. B....129
Ball, J....53
Barennes, A....151
Barnes, L....70
Bassett, W. T....26
Batchelder, H. J....163
Bate, H....162
Bazault, J. E....79
Beeson, J. S....84
Bell, A....71
Benson, M....94
Bentham, H. W....159
Bentley, W....78
Bernard, F....47
Betis, P. M....110
Bishop, E....41
Blakemore, R....92

Page
Blundell, W....113
Bonneville, H. A....5, 53
Bossert, A....136
Bouttier, L....60, 81
Bouttier, L....121
Bown, W....126
Brazenor, T....137
Brewer, E. G....79
Brice, A. C....72
Brown, C....119
Brown, D....127
Brown, G....105
——, W. M....92
——, W. Morgan....97, 98
Brunet, J. M....101
Bullows, A....107
——, J....107
Burden, J. A....158
Burgon, C....53
Burman, W....148
Busk, S....52

Caldwell, J....164
Campbell, A....66
Caoutchouc and Gutta-percha Co., The Continental....146
Cardozo, H. G....106
Carr, C. J....68
Carron, F. R., jun....175 (*App.*)
Carter, W....35
Cate, E....66
Chamberlain, W....157
Chaquette, E....143
Charlton, T....169
Chase, S. E....33
Chiswell, W....22
Clark, A. M..7, 61, 89, 91, 159

Page
Clark, W....5, 12, 24, 34, 107, 110, 132, 164
Clarke, J. N....................157
Clément, A........................7
Clinch, F..........................85
Closson, J. B. M. P...........87
Cockburn, W., the elder....57
Colls, H. jun......................75
Continental Caoutchouc and Gutta-percha Co...146
Cooke, R. F.....................137
Cottam, E...................23, 58
Couhault, M. J. B.....121, 135
Couper, J. B......................42
Courtois, C........................53
Courtois, C..............128, 152
Crossman, C...............74, 78
Cunningham, A. B............31
Curtis, D...........................81
Curtis, D.........................128

Dale, T. H.......................151
Dalrymple, G. A. F. E.......24
Darlow, W........................95
Davies, J..........................13
——, J. W.......................52
Davis, S...........................22
De Nabat, A. C......171 (*App.*)
————-, X. C......171 (*App.*)
De St. Ange Count A. G....112
De Werchin, E....................5
Dodge, D..........................61
Dominick, F.....................1, 7
Dover, G...................28, 136
Downie, H..................35, 40
Drew, T. H.......................82
Druce, G. F.....................129
Dufilhol, A. M..................14
Dunning, G......................133
Durant, J.........................114
Durnford, H. F................106

Edard, G..........................79
Edmonds, J. T...................32
Edwards, J..........................1
———, W..........................14
Elliot, J. C.......................119

Page
Ellis, G. H....................73, 86
——, T. A.........................96

Fell, A. M...........................8
Ferguson, J. H............74, 78
Field, T.............................16
Finney, J.........................152
Fitzpatrick, B....................91
Flagler, H. K....................163
Flear, J.............................59
Fletcher, H........................65
Flower, R.........................144
Foulkes, S. W..................150
Foulkes, W. D. 1..............150
French, W...........................7
Fryer, D............................82
——, J. C........................127
Fuller, T. H..........92, 97, 98
Fulton, J.........................127

Gardner, H......................121
Gedge, J..........................116
———, W. E...25, 50, 66, 157
George, C. B...................133
Gilbert, G..........................73
Gilman, H.......................120
Girdwood, R..................9, 27
Goulstone, A. J................120
Gray, E.............................17
——, J.................175 (*App.*)
Grayson, J. R....................51
Greaves, J.........................83
Greenwood, A..................131
————, G. H..................70
Greenwood, W. M............157
Grier, W. F......................164
Griffing, J. S.....................38
Griffiths, H........................19
Grigg, W..........................106
Guérin, P. F.......................98
Guernsey, J. W................108
Guerriero, A....................112

Haddan, H. J....................160
Haggett, W......................109
Hall, J...............................34
Hancock, J. L.....................39

Page
Harris, I. B................35, 40
———, J.........................72
Haseltine, G...3, 71, 108, 120, 127, 133
Haslam, L....................167
Hawes, M. E.................118
Hay, J 13
Haycock, W....................33
Heard, J. R...................143
Heath, J........................52
Hedley, F.......................37
Henderson, A. C.........54, 126
Hengst, C 48
Henri, G. W.........170 (*App.*)
Heywood, H. J..............156
Higham, J. A. B..............15
Hill, H. C.......................99
Hodge, P. R....................48
Hodgson, N...................127
Holder, P......................136
Holder, T..................28, 67
Holland, A....................130
———--, H.....................87
———--, W.....................76
Holt, B...........................67
Holyoake, W.................119
Hopkin, D......................62
Hore, C.......................107
Horse-nail Co., National...120
Horsfall, W...................131
Howard, F. J..................72
Howe, O. A......................43
Huggett, J............9, 49, 101
————, J. A.......9, 49, 101, 139
Hughes, E. T............38, 123
Hunt, B.......69, 97, 118, 124, 126, 137
Hyatt, T......................116

Ivison, M. W..................109
Ivory, J. H....................128

Jackson, G......................99
Jarvis, J. E....................167
Johnson, E....................154
————, J. E...21, 83, 87, 90

Page
Johnson, W...................130
Jones, D.........................82
Judge, J.......................167

Kästner, G. A...................76
Kelley, E. W...................85
Kidd, J. H......................66
Kingsland, J. D...............48
—————, *L. S*..............89
Knight, H..................34, 44

Lake, W. R...6, 15, 18, 30, 36, 43, 46, 103, 112, 122, 140, 157, 157
Laloy, J. F. A.................147
Lancaster, J...................124
Lansley, J.....................155
Laurent, V. H.......171 (*App.*)
Lebacq, F........................21
Lebacq, F.................92, 100
Le Bacq, F....................125
Lee, C..........................169
Lengelée, A.................60, 81
Leonard, W....................20
Lewis, J.....................83, 94
Lewis, W........................94
Lewthwaite, J..................16
Liebreich, M. E. O............42
Little, W......................155
Longden, D...................145
Longsdon, D..................141
Lucena, S. L......................2
Lyon, W. P...............129, 151

McDougall, A..131, 173 (*App.*)
McEntee, W. C................89
Macintosh, J..................136
McKenny, J.....................29
Mackley, G. T................132
McLeod, F. H.............. ..144
McWilliams, A. S..........111
Mallard, A......................31
Mallard, père..................31
———-, *G*.......................31
———-, *J*.......................31
Marchant, F. G...............102
————-, R. M..............95

Page
Marsden, H. M...50, 57, 79, 95
———, R..................135
Martin, A...131, 133, 146, 154
———, H.....................168
———, R...............110, 134
Maynard, R..........175 (*App.*)
Mearns, J....................165
Mendel, S...................117
Miller, G.....................135
Mitchell, R. B.................15
———, W.......................6
Monckton, E. H. C..........166
Monks, J.....................138
Montgomery, J.................42
Moran, H.....................112
———, *P*.....................112
More, J. W...........47, 51, 86
Morgan-Brown, W......97, 98
Morl, J. H......................33
Morrison, A. C......170 (*App.*)
Mulholland, H.................71
Mulliner, R. B...................2

Nabat, A. C. de .....171 (*App.*)
———, X. C. de ....171 (*App.*)
National Horse-nail Co., Incorporated..................120
Nes, G. M.......................87
Newton, A. V..................48
———, W. E.........42, 64, 70
Nicholson, W..................62
Norman, J.....47, 51, 86, 104, 124

Offord, J. S.....................32
O'Leary, T.......................6
Overman, T. W..............69

Palmer, W......................11
Parkin, I........................83
Peillard, C. J. B..............50
Philcox, G......................11
Phipps, T. L......113, 115, 148
Picot, A. E....................126
Pilté, A........................148
Pilter, T.........................54
Planque, J. E..................100
Plant, W.......................117

Page
Polsey, A. M......................36
Price, A. P........................42
———, D..........................16
———, E..................77, 153
———, E. the younger......153
———, J. W......................30
Prince, T. T......................92
Pringle, H........................74
Pritchett, H....................146
Puente, S.......................143
Purdie, P........................138
Putnam, S. S...................18

Quinn, A........................91

Raine, B. W....................135
Rawlings, E. H...........30, 46
Ré, J..............................103
Reade, W. H....................46
Reid, G. A.......................74
Renshaw, A. D..................18
Reynoso, A. F. C.......124, 137
Rhode Island Horse-shoe Co... 122
Riley, J..........................165
Robbe, G........................101
Roberge, D.......................37
Roberts, J........................24
Robertson, J. S.........56, 103
———, R.......................168
Rogers, S.........................77
Rose, H. C......................105
Rowatt, T.........................73
Rowe, C...........................16
Russell, J.......................140

Salom, S. H...............16, 53
Sargeant, C.....................75
Saunders, R. 79
Scantlebury, W...............72
Scheidecker, C...............106
Schilt, E.........................25
Schlesinger, S..................64
Sellman, R. J.................117
Shanks, J..........................4
———, W.......................55
Shearman, H. F.................6
Shelley, J. S...................145

Page
Shepard, C. H...........159
Sibut, P. M., sen..........66, 126
Simons, E..........28
———, R. H..........146
Simpson, A..........111
———, A. L..........40
Sims, F. M..........84
Small, J. H..........139
Smith, G..........29, 88
———, M..........158
———, T. J..........60, 81
Spong, J. O..........156
Spratt, J..........25
St. Ange, Count A. G. de...112
Steers, R..........82, 129
Stolz, A..........136
Swain, J..........153
Swainson, G. F..........136

Taylor, T..........52
Tevis, E. L..........157
Thomas, C..........77
Thompson, H..........22
———, J. R..........111
Thuillard, A..........127
Tidmarsh, J..........27
Tongue, J. G..128, 175 (*App.*)
Toppin, P..........141
Touaillon, C..........112
Trench, F..........47
Tucker, H. C..........13
Turnbull, S..........125
Turner, A. W..........156
———, J..........110
Turquand, W. M. G..........149, 162
Twigg, G..........60, 108

Upton, J..........80

Valleton, J. H..........100
Vaughan, E. P. H..........106
Very, T. S..........163
Vezzoli, V..........103
Vincent, C..........60, 81

Page
Walker, A..........10
———, J. T..........63
———, P..........10
———, P. M..........64
Wallen, T..........76
Wandless, W..........165
Ward, D..........75
Warner, E. C..........47
Way, D. T..........94
Wehrlin, E..........97
Weisgerber, C. L..........25
Welton, T..........10, 37
Werchin, E. de..........5
Wetton, C. E..........150
Wheeler, E. S..........123
Whipple, L. W..........90
———, *M. D*..........90
Whiteford, J..........162
Wickens, H..........174 (*App.*)
Wickersham, W......174 (*App.*)
Wightman, A..........105
Williams, C. H..........62
———, W..........44
Willis, R..........98
Wills, J. A..........89
Wills, J. B..........160
Wilson, J. C..........59
———, N..........48, 156
Winder, R..........146
Wing, D..........140
Winship, J..........45
Wirth, F..........146
Wise, W. L..........76, 158
Wishart, F. A..........19
Wolseley, F. Y..........145
Woolhouse, H..........138
Woolrich, M..........3

Yates, W..........122
———, W. E..........133, 147
Youle, S. P..........52

Zimmerman, R..........116

FARRIERY.

FARRIERY;

INCLUDING THE MEDICAL AND SURGICAL TREATMENT OF ANIMALS.

1867.

A.D. 1867, January 21.—No. 154.

EDWARDS, JOHN.—" Horse-shoe cushion."

The " cushion " is placed between the shoe and the hoof and is secured by the nails passing through it. It is composed of india-rubber combined with fabric. The upper side fits the hoof, "being chamfered or bevelled to fit the interior " thereof. The under side is made with a flange, " and outside this " flange the inner side of the shoe fits." The fabric is incorporated with the rubber by means of pressure, while it is soft. Kamptulicon or other suitable material may also be employed. " The cushion will entirely prevent the horse " from picking up stones and balling up with snow in winter ; " it will cure 'interfering' in one day's wear, and pinched " feet in three weeks." " It also supersedes the pernicious " use of hoof ointments for the unnatural growth of horses " feet."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1867, January 28.—No. 225.

ABEL, CHARLES DENTON.—(*A communication from Friderich Dominick*.)—(*Provisional protection only*.) — " Appliances for " horse-shoes as a substitute for roughing."

A bolt is formed with a " jaw " which fits over the inner edge of the front of the shoe ; a spike on the jaw serves as the roughing. The other end of the bolt is screwed, and passes through "a tapped bush in a bridge piece extending across " the heel of the shoe, and taking purchase against the two " inner edges thereof." The bush can be turned by means of a spanner, and is fitted with a ratchet; projecting pieces on the ends of the bridge piece act as "roughing" for the heel; these pieces are preferably "made with chisel-shaped " points, the edges of which are arranged at right angles to " each other so as to prevent the shoe from slipping side- " ways." Instead of the tapped bush, a nut may work on the bolt, which then passes through a hole in the bridge, or the bolt may be separate from the jaw, and screwed into it, it then rests at its hinder end in a recess in the bridge, and is held therein by screwing it into the jaw.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1867, February 5.—No. 318.

LUCENA, Stephen Lancaster.—Roughing horse-shoes.

There is "a socket in the heels of the horse-shoe with a " groove on each side of the socket, and another groove at " the end of each socket, and a rough is constructed so as to " fit tightly into the groove at each side, and at the end of " each such socket, which rough is further secured by a " screw." There is also "a similar socket in the centre of " the toe of the shoe, from the front to the back part of the " toe of such shoe," within which is inserted a rough secured by a screw and "by its extending from the front to " the back of the toe of the horse-shoe, and clipping tightly " round the back of it."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1867, February 11.—No. 381.

MULLINER, Robert Bouverie.—(*Provisional protection only*). —Horse-shoes.

The shoe is double, there being a thin shoe fastened to the hoof in any suitable manner, and a second similar shoe secured upon this. This "outer or wearing shoe" may be secured by screwed pins and nuts, rivets, &c. A pad of leather, &c. may be placed between the two shoes.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1867, February 27.—No. 533.

HASELTINE, George. — (*A communication from Samuel Adlam, junior.*)—"Cushion for horses' feet."

A vulcanite pad is formed to fit the shape of the foot. It fits between the hoof and the shoe, and also extends down behind the inner edge of the shoe, and back over a portion of the under surface of the foot. It is intended to form an elastic cushion for the foot, and also to prevent snow getting between the hoof and the shoe, and the consequent "balling" of such snow. Strips of fabric may be worked into the rubber.

[*Printed*, 8*d*. *Drawing.*]

A.D. 1867, February 28.—No. 564.

WOOLRICH, Murhall. — (*Provisional protection only.*) — " Means and apparatus employed for the cure of the disease " called 'foot-rot' in sheep."

A boot is used which fits loosely over the foot of the sheep; the boot is made of leather with a sole of iron. It is secured by a strap. The foot is dressed in the usual manner, and the boot then strapped on to keep the dressing from being removed, and the infective matter from being distributed over the grass, &c. trodden on by the animal.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1867, March 11.—No. 695.

AKERS, William.—(*Provisional protection only.*)—" Construc- " tion and adjustment of horse-shoes."

The shoe is "compound." There is a "plate or false shoe of " a suitable outline or form of thin metal, the extremities " of the heel being raised or made thicker than the other " part this part is to be firmly fixed to the hoof by nails or " screws and by a slot fitting on a square projection at the heel " of the false plate, and a layer of gutta-percha, india-rubber, " or other suitable material may be placed on the false shoe, " filling up the space to the level of the raised heel pieces." The "outer or true shoe" is in three sections, "a front or " toe piece and two side pieces." These are formed with projections fitting into one another. "These side plates are "fixed to the false shoe by means of nails or screws, and by "a square projection on the india-rubber or other material "intervening." "The screws or nails penetrate into the "hoof. The toe piece has a vertical projection in the centre "which fits in a recess in the front of the hoof; to the rear "of this projection a horizontal plate is rivetted extending "to the width of the bar forming the shoe, and through "this plate and shoe a female screw thread is drilled. The "toe piece is then also secured to the false shoe by the "insertion of the horizontal plate through a slot or groove "formed on the upper surface of the false shoe in the centre, "and by means of a screw passing through the plate and "through a hole or opening cut in the india-rubber or other "material, and through the false plate, but not into the "hoof which is slightly hollowed out at that part." As the different parts wear, new parts can be substituted. In frosty weather a roughened plate may be substituted for the toe piece. The india-rubber, &c. between the plates may be dispensed with, "in which case the projections on the false "plate at the heel are not formed, but the plate is made "flush all round, merely forming the square projection as "before for securing the true side plates of the shoe."

[*Printed, 4d. No Drawings.*]

A.D. 1867, April 2.—No. 982.

SHANKS, James.—(*Provisional protection only.*)—Clipping horses.

A "cutting cylinder" is mounted in a suitable frame with a handle or strap for holding it. The "cutting surface" is formed of "helical or other shaped knives," "and an edge "or plate extends across the machine or framework against "which the knives" act. The cylinder is geared to rollers running over the surface of the animal's skin, and is thereby caused to revolve. The cutting cylinder is adjustable to vary the length of cut.

[*Printed, 4d. No Drawings.*]

A.D. 1867, April 2.—No. 985.

CLARK, William.—(*A communication from the Chevalier Achille Angelini.*)—" Bathing apparatus, applicable principally " for horses."

The apparatus is intended for use specially in cases of horses suffering from disease. It consists of bags of impervious material of such shape as either to contain the whole body of the animal, or to be applied to any of its legs. Hot or cold liquids or ice may be placed in the bag, which is fitted with straps by which it is attached to suitable supports, and also to the body of the horse. The horse's head is tied up with a halter, and he himself is prevented from moving sideways by side bars. The straps which hold the bag may also be so arranged as to support the body of the horse.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1867, April 8.—No. 1046.

BONNEVILLE, Henri Adrien. — (*A communication from Emeric de Werchin.*)—Soap.

"This soap possesses the property" "of destroying the " insects, larvæ, animalcula, miasms or morbific principles" contained in articles washed therewith. It may be used for the "cleansing of habitations, ships, stables, and all such " like infected places." "The principal ingredient" "is the " bark of the American quillai tree, the root of the Egyptian " saponaria, the root of the indigenous saponaria or the plant " itself, and the root of the lychnis of China, brought back " by solution to the state of more or less concentrated " extract." "One or several of these extracts" is or are combined "with one or several" of the following :—"Phœnic " acid, camphor, chlorine, benzoine, aloes, turpentine, sulphur, " honey and dextrine." The extract is treated with hydrochloric acid, and "hyposulfate of soda" is added in the proportion of 4 lbs. to each cwt. of solution. The solution is concentrated and one or more of the above-named substances added. The proportions vary, and are given as follows :— " Phœnic acid," "from twenty to a hundred pounds or there- " abouts per hundred litres of juice." Camphor, dissolved in "phœnic acid," "an amount which must not exceed one

" hundred grammes per litre of juice." " Chloride of lime " " a hundred grammes per kilo of juice." " Benzoin," " its " resin " dissolved " in phœnic acid in the proportion of three " hundred grammes for two hundred grammes of the latter." Aloes, the same as the resin of benzoin. Spirit of turpentine, " five hundred grammes per litre of juice." Sulphur, dissolved in the " proportion of twenty grammes per hun- " dred grammes of spirits of turpentine " and the solution used " in the proportion of three hundred grammes per litre " of juice." Honey, " five hundred grammes per litre of " juice." " Dextrine or its derivatives," " an amount which " must not exceed five hundred grammes per kilo of juice." After the ingredients are mixed, the whole is desiccated.

[*Printed, 4d. No Drawings.*]

A.D. 1867, April 15.—No. 1119.

LAKE, William Robert.—(*A communication from Henry Franklin Shearman and Thomas O'Leary.*)—(*Provisional protection only.*)—" Shoes for horses and cattle."

The calks are made separate, and secured to the shoe by screws, wedges, keys, &c. It is preferred to make the calk to screw into the shoe, and secure it by one or more additional separate screws.

[*Printed, 4d. No Drawings.*]

A.D. 1867, May 28.—No. 1580.

MITCHELL, William.—" Food for sheep or other animals."

The food is made of " the seed or pulse of the lupin," ground and mixed with linseed, wheat, barley, beans, &c. " The " lupin in itself is a bitter astringent, acting as a powerful " tonic to create appetite, with a tendency to strengthen the " digestive organs of the animals feeding on it." " For " animals of a constipated habit " the food is prepared " with " a reduced quantity of the seed or pulse of the lupin as com- " pared with that of other seed, corn, or pulse." " For " animals whose condition is relaxed," a greater proportion of lupin is added.

[*Printed, 4d. No Drawings.*]

A.D. 1867, June 10.—No. 1699.

FRENCH, William.—"Roughing horses and other animals."

Studs are fixed on the shoes by nails passing through them and through holes in the shoe, the holes being formed obliquely through the shoe so that the nails may be clenched down on the outer edge of the shoe. The studs may also be secured to the shoe "by passing a thin piece of iron through the stud to "clip the inner circle of the shoe," this being clenched "against the outer part of the shoe and the hoof." The studs may be made with "a pin to fit into the shoe." The nail and stud may also be formed in one piece.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1867, June 12.—No. 1724.

ABEL, Charles Denton.—(*A communication from Friedrich Dominick.*) —(*Provisional protection only.*)—"Appliances for "horse-shoes as a substitute for roughing."

A bolt is formed with a "jaw," which fits over the inner edge of the front of the shoe. A spike on the jaw serves as the roughing. The other end of the bolt is screwed, and passes through "a tapped bush in a bridge piece extending "across the heel of the shoe, and taking purchase against the "two inner edges thereof." The bush can be turned by means of a spanner, and is fitted with a ratchet. Projecting pieces on the ends of the bridge piece act as "roughing" for the heel. These pieces are preferably "made with chisel-"shaped points, the edges of which are arranged at right "angles to each other, so as to prevent the shoe from slipping "sideways." Instead of the tapped bush a nut may work on the bolt, which then passes through a hole in the bridge, or the bolt may be separate from the jaw, and screwed into it. It then rests at its hinder end in a recess in the bridge, and is held therein by screwing it into the jaw.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1867, June 21.—No. 1815.

CLARK, Alexander Melville. — (*A communication from Auguste Clément.*)—"Apparatus for measuring horses' feet, "and for adapting and fitting shoes thereto."

Two apparatuses are described, (1) a "podometer" for measuring the foot, (2) a "former" for shaping the shoe.

1. The podometer consists of a number of radial bars fixed in a circular frame. The bars are graduated, and on each slides a stop, capable of being clamped on the bar by a screw. The foot is placed on the frame, and all the stops are brought up against it and clamped.

2. The "former" also consists of a frame fitted with radial bars, so mounted that they can be firmly clamped in any position by wedges. The podometer is placed on the "former," and is caused to register therewith by means of pins on the "former" fitting in slots in the podometer. The bars are slidden out till they rest against the stops of the podometer, when they are clamped, and the podometer removed. A red-hot shoe is then placed on the "former," and secured by a screw. By the use of a hammer the shoe is forced down on the "former," and caused to assume the shape thereof. The "former," as well as the podometer, is graduated.

[*Printed,* 1*s.* 8*d.* *Drawings.*]

A.D. 1867, June 29.—No. 1900.

FELL, Alexander Morrison.—(*Provisional protection only.*)—Sheep wash.

Crude petroleum, &c. is treated with sulphuric acid and with alkali, and is washed and re-distilled. The solid paraffin may be extracted by any known method. It is then mixed with a "saponaceous compound" as follows:—"One hundred "parts by weight of mineral oil, eight of resin, four of palm "oil, twelve of soda ley at 12° Twaddell, twelve of coal oil, "twelve of potash ley at 12° Twaddell, and eight of potash "ley at 18° Twaddell. To the compound made with these "ingredients and boiled there are afterwards added thirty-"two parts of naphthaline." Other materials may be substituted for the above. The compound is to be applied in the ordinary way. "In cases where it is desired to have applied "to the animals unsaponified oleaginous matter which will "not be easily removed by rain, and which will tend to pre-"vent the attacks of insects, a separate compound is formed "by mixing with the mineral oil," prepared as above, "about "a twentieth of its weight of naphthaline." It is preferred to float a small quantity of this "on the surface of the saponaceous or other 'sheep dip,' so as that when the animal is taken out of the dip its fleece or skin may take it up."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1867, August 10.—No. 2305.

GIRDWOOD, Robert.—Sheep dip.

The invention "consists in combining an oil or mixture of "oils obtained by distillation from the tar of coal, wood, peat, "or seaweed, with an alkaline lye and the ordinary tar "obtained by distillation from wood, peat, seaweed," &c. "or rosin, crude turpentine" or other "gum resins." The compound is prepared by dissolving "a portion of the tar or "resinous matter in one of the tar oils or in a mixture of such "oils, such solution being made with or without heat." The lye is then added, and the whole mixed by preference in the cold state. The proportions preferred are:—6 parts by weight, "light oil of coal tar sometimes called crude naphtha or light "pitch oil," 2 parts "white tar" or the same of "'thus' "resin," 3 parts lye of caustic soda or potash at 40° Twaddell. The compound is stirred before use, and may be applied in any suitable way.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1867, September 27.—No. 2733.

HUGGETT, John, and HUGGETT, John Albert.—Machinery for making horse nails.

A hammer working in vertical guides is operated through a spring arm by an eccentric on a shaft driven by power. A piston mounted on the hammer head works in a cylinder fitted with an air valve. When the valve is closed the piston is held stationary and the spring arm yields to the motion of the eccentric. On the anvil are two steel dies of which one "has "upon it an incline or taper corresponding with the face of "the nail, and the other an incline or taper corresponding "with the side of the nail." Similar dies are carried by the hammer head. The bar from which the nails are to be formed is held in a circular holder mounted on a slide. It is thrust through this holder up to and against a stop on the anvil by the side of the dies. The workman then depresses a treadle which causes a catch to grip the rod and also carries the slide along till the end of the rod comes over the dies. The same movement of the treadle opens the air valve, so that the hammer is caused to operate on the end of the rod. A cam on a counter shaft driven at half the speed of the main shaft acts against a spring arm from which a cord passes over a pulley on the rotating holder. By its action the rod is shifted backwards and forwards a quarter turn between every two blows of the hammer, and brought alternately under each of the two dies. When the rod has been pointed by the action of the dies it is removed from the machine and then "the pointed end being "shorn off forms the nail." A wedge worked by a hand lever slides on the anvil "to limit the descent of the hammer "which strikes down upon it when the nail is complete."

[*Printed,* 10*d.* *Drawing.*]

A.D. 1867, October 22.—No. 2965.

WALKER, Peter, and WALKER, Andrew.—(*Provisional protection only.*)—Horse-shoes.

Securing the shoes without nails. The shoe is provided with a projection, "standing up at or near the front thereof "and lying against the front of the hoof for receiving by a "catch connection part of a band of iron or other metal." "This band thence passes round the lower part of the wall of "the hoof to the back thereof, and at its ends is by nuts and "screws secured to lugs or projections standing up at the "back ends or the heel of the shoe." "The shoe may have "projections to serve as roughings."

[*Printed,* 4*d.* *No Drawings.*]

A.D. 1867, October 23.—No. 2976.

WELTON, Thomas.—(*Letters Patent void for want of Final Specification.*) — "Ozonized or oxygenated bread biscuits, "cakes," &c.

"Curing diseases in man and animals by means of charging "the food with ozone, oxygen, or other gases." The material to be charged with gas is placed in a receiver from which atmospheric air is exhausted, and the gas allowed to flow in. The food may be placed in boxes into which gas is forced, and which are secured after being thus charged.

The invention is also applied to bread making and to malting.

[*Printed, 4d. No Drawings.*]

A.D. 1867, November 28.—No. 3368.

PALMER, William.—Horse-shoes.

The shoe is made of iron bar the section of which is in the form of "a wedge with the point downwards, and with "the upper face or surface of the wedge prolonged in one "direction so as to form a projection on one side of the upper "face of the wedge." "The lower or pointed part of the "wedge-shaped part of the bar forms the under part of the "shoe, which is next the ground; the flat and upper part "forms the upper part of the shoe which is next to the "horse's hoof." The shoe is shaped "so that the projecting "part of the upper portion of the bar shall form the front or "outside part of the shoe." "The holes for the nails are "made in the outer rim of the shoe which formed originally "the projecting part of the upper portion of the bar." To give better hold on the ground, portions of the lower edge of the shoe are punched out. The shoe is intended for use "in "frosty weather" and at other times.

[*Printed, 4d. No Drawings.*]

A.D. 1867, December 2.—No. 3422.

PHILCOX, George.—(*Provisional protection only.*)—Horse-shoes.

A "permanent" and a "wearing" shoe are used. The former is fixed to the hoof "with two bands coming from the "hind part of the shoe to the front of the hoof, screwed "together with a screw." "The screw is made in two pieces "to the shape of the hoof, with a joint to open and close to the "shape of the hoof, fixed or held together with an iron plate "across the shoe, and two frogs or clips to hold on the front "of the hoof." "The wearing shoe screws on to the per-"manent shoe with six screws, the heads of the screws being "countersunk into the wearing shoe."

[*Printed, 4d. No Drawings.*]

A.D. 1867, December 9.—No. 3498.

CLARK, William.—Clipping horses.

The apparatus consists of "two steel blades having cutting "edges, one of which blades has a comb or series of prongs "attached to its back surface, arranged along and projecting "beyond the cutting edge thereof, while the other blade is "made to pass backwards and forwards over the front sur"face of the first-named blade in such a manner that the "cutting edges of the two blades operate with a shearing "action in front of the comb."

Various arrangements may be employed for effecting the required action. The blades may be hinged together as shears and operated by handles, one blade being held stationary and the other moved over it. Or the motion "may be effected by "a crank wheel or spring, and in place of being made to open "on a hinge" "such moveable blade may be made with a "sloping cutting edge and receives a parallel reciprocating "motion by means of a handle, crank, or wheel in a similar "manner to shears for shearing metals."

The blades are set at an angle to their handles and these are cranked. The comb is fixed to its blade by screws so as to be adjustable. "A strip of india-rubber may be inserted "between the surface of the comb and the blade." Stops on the lower blade or on the handle regulate the movement of the moving blade. The blades may be curved to suit the surface on which they operate. The lower blade may be made rigid by forking its handle, and the upper blade by forming a rib thereon. The cutting parts of the blade may be of separate strips of steel. The blades may be "double, that is "to say projecting on either side of the pivot, in which case "they are so formed that in opening the blades on one side "the other blades are closed."

[*Printed*, 10*d*. *Drawings*.]

1868.

A.D. 1868, January 20.—No. 191.

DAVIES, Joseph.—"Machinery for shaping malleable ma-"terials."

Horse-shoes are mentioned among the articles to be manufactured by the machinery, but no special apparatus is described for their construction. A roller and a die with a curved surface, or a pair of rollers are employed to shape the articles. By means of a lever operated by a cam, the blanks are fed to the rolls from a hopper with "a sliding shutter to " allow one of the blanks to fall from it into the space between " the roller and the die." "In shaping and bending hooks, " shackles, links and other articles, the mechanism consists " of a mandril and two rollers to which rectilinear and semi-" rotary motion is given by cranks or other equivalents." The rollers and mandril may be formed so as to give the required figure to the surface of the article.

[*Printed*, 3*s*. *Drawings.*]

A.D. 1868, February 5.—No. 398.

HAY, John.—Horse-shoes.

The shoes are made with female screws in the heels, and, if required, in the toes. Into these are screwed "tightly-fitting " male screws with solid square heads, made by preference of " steel." These form the heel and toe pieces of the shoes. When it is desired to rough the horse, these screws are removed, and other screws, with suitably formed pointed heads, are set in their place. Also when the heel and toe pieces become worn, new pieces can be substituted for them.

[*Printed*, 8*d*. *Drawing.*]

A.D. 1868, February 10.—No. 451.

TUCKER, Henry Charles.—(*Provisional protection only.*)—Shearing sheep, &c.

Reciprocating cutters, working over a set of fixed cutters are operated by a spring with a suitable train and escapement. Or a crank handle may be used for the same purpose. The cutters are mounted "at the front edge of a suitable box or " case provided with a handle."

[*Printed, 4d. No Drawings.*]

A.D. 1868, February 18.—No. 526.

DUFILHOL, Adrien Marie.—(*Provisional protection only.*)—Horse-shoes.

The shoe is formed with:—(1.) "From 5 to 7 conical rivets, " one at the top of the toe, one at each end of each heel, and " one or two between the toe and each heel." "Between the " heads of these rivets and the upper face of the shoe there " should be a space of about $\frac{1}{8}$ of an inch." (2.) In "each " branch of the shoe" "two or three openings of a truncated " pyramidal form, the broad base being in contact with the " ground." (3.) "In the branches of the shoe 4 or 5 cavities " of about $\frac{1}{8}$ of an inch in depth of the shape of a reversed and " truncated V, the point upward." (4.) "Oblique rims, the " lower face three times broader than the upper, along the " two edges of which runs a gutter or small slope forming a " hook from the bottom upward." Notches are to be cut " in the foot" and cement is run in to as to hold the shoe thereon. The cement which it is preferred to employ is made of 75 parts gutta-percha, 10 india-rubber, and 15 "gum-" lac."

[*Printed, 4d. No Drawings.*]

A.D. 1868, February 19.—No. 551.

EDWARDS, William.—(*Provisional protection only.*)—Roughing horses.

Studs of steel or iron are fitted to the shoes, steel being preferred. "Upon the toe of the shoe is formed a raised clump " of sufficient thickness to receive a dovetailed groove cut " through its length and transversely with the toe of the " shoe; into this groove a wedge-formed stud or tooth is " inserted, fitting tightly and driven into position with a " hammer. Dovetailed grooves are also cut across each heel " of the shoe and similar studs or teeth are inserted in " them;" the studs are removed by driving them out with a hammer.

[*Printed, 4d. No Drawings.*]

A.D. 1868, February 20.—No. 573.

LAKE, William Robert.—(*A communication from James Andrew Bolton Higham.*)—(*Provisional protection only.*)—" Shearing " sheep, &c."

" A rotary knife or cutter is connected to a turbine wheel " or rotary engine driven by steam, compressed air, or " water." " The apparatus is provided with a metal case " whose inner periphery may be either plain or serrated. " Flexible pipes are employed for the admission and exhaus- " tion of the steam, air, or water. The shaft of the engine " or turbine wheel carries a small toothed pinion on or near " its extremity; this pinion gears into and works a toothed " wheel which runs on a pin or stud fitted in a lug on the " outside of the perimeter of the case; on the side of this " toothed wheel are two studs which fit into corresponding " holes in the body of the knife or cutter. A steel plate is " firmly attached to flanges on the under side of the case, and " a portion of its circumference is slotted or cut to form a " comb. A guard plate is provided to keep the wool or hair " of the animal from passing beyond the comb. The depths " of the wool or hair left on the animal is regulated by the " thickness of the comb." The cutter " may be worked from " an eccentric in a substantially similar manner to the cutter " bar of a reaping machine."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1868, February 22.—No. 589.

MITCHELL, Robert Brightmore.—(*Provisional protection only.*)—Sheep shears, &c.

1. Sheep shears and similar articles are made by means of dies or swages mounted "in an anvil and head of a hammer " or stamp," instead of by hand.

2. They are made by " cutting iron and steel into certain " lengths" by hand or machine and " welding the iron upon " the steel either in the centre or otherwise."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1868, March 4.—No. 741.

LEWTHWAITE, John.—Treatment and application of parkesine.

Among the various articles in the making of which parkesine may be employed, horse-shoes are mentioned.

The specification describes, (1) the manufacture of a fabric coated with parkesine; (2) a method of uniting several such fabrics together; (3) a method of moulding hollow articles. No description of the proposed method of using parkesine for the manufacture of horse-shoes appears to be given.

[*Printed*, 10*d*. *Drawing.*]

A.D. 1868, March 6.—No. 772.

PRICE, Daniel, and ROWE, Charles.—Apparatus for combing animals.

The apparatus consists of a receptacle combined with a comb, so that parasites removed from the hair of animals may be retained in the receptacle. The comb forms one side of the receptacle, and the bottom consists of a hinged plate, the edge of which is kept in contact with the points of the comb by a spring. The cover of the receptacle may be transparent.

[*Printed*, 8*d*. *Drawing.*]

A.D. 1868, March 13.—No. 866.

SALOM, Salom Henry, and FIELD, Thomas.—Horse clipper.

A segmental shaped comb plate, fitted with a handle, has pivoted thereto a second handle, the end of which is formed into a socket, and in this socket is fitted a cutter "so that
" when the handle is moved it will carry the cutter or knife
" in a plane parallel to the comb plate, the edge of the knife
" passing over the face of the teeth of the comb, so that the
" substance required to be cut between the teeth would be
" clipped or sheared by the knife in its passage right and
" left."

[*Printed*, 8*d*. *Drawing.*]

A.D. 1868, March 24.—No. 994.

GRAY, Edward.—" Metal bars intended to be made into " horse-shoes and other articles."

Bars of iron, steel, or iron faced with steel are rolled with " a number of teeth or serrations made longitudinally, " transversely, or otherwise on one or more of the surfaces of " such bars of whatever section they may be." From these bars the shoes are made. The shoes are specially adapted for frosty weather.

[*Printed*, 6*d*. *Drawing.*]

A.D. 1868, March 27.—No. 1053.

ADIE, Patrick.—" Apparatus for shearing sheep and clipping horses."

Several varieties of the apparatus are described.

1. A pair of rotating discs with radial cutters formed or fixed thereon are employed. A continuous or intermittent motion is given to the upper disc by various means, as a ratchet motion operated by a spring lever handle, a grooved pulley and driving handle, &c. A portion only of the lower fixed disc may be fitted with teeth. The fixed disc has a handle by which it is held.

2. " The cutting blades or points are arranged along a " straight or slighly curved surface, and cut in both directions by means of a reciprocating or rectilinear action." A toothed cutter plate works over a similar fixed plate, being operated by a lever handle pivoted on the fixed plate, and having a short arm engaging in a slot in the cutter plate. The cutter plate is guided by slots working over the screws holding it to the fixed plate. The two plates are held to their work by a spring, which may also be applied to the clipper described in No. 2796, A.D. 1866. The back edge of the cutter plate also works against a bent part of the fixed plate, and this helps to keep the points together. The spaces between the teeth are " equal to the breadth of the shear " points themselves at their bases." " The blades are made " with two cutting edges and slightly hollow on their working faces."

[*Printed*, 8*d*. *Drawing.*]

A.D. 1868, April 1.—No. 1110.

LAKE, William Robert. — (*A communication from Silas Safford Putnam.*) — "Machinery for manufacturing horse-" shoe nails."

The nail rod is acted upon by two pairs of hammers, one acting vertically, and the other horizontally. Both pairs are actuated by shafts at the back of the machine, carrying cams. One of the vertical hammers is lifted by the cam, and the other is worked from the first by means of a pin thereon engaging in a slot in the first-named hammer. The hammers are brought together by springs. The side hammers are similarly worked. The nail when finished is cut off by a pair of cutters brought to bear upon it by means of levers, actuated from the main shafting. The vertical hammers, and the cutters, &c. are mounted on a frame which is pivoted so that it can vibrate laterally, and be swung to the side, so as to carry the hammers out of the way, and allow the cutters to act, and then to carry the cutters out of the way, and bring the hammers back into position for action. Both pairs cf hammers are caught and held by stops suitably arranged to keep them open, against the tension of their springs, when they are out of action. The springs have an additional tension put upon them as they come into action by means of levers, so that " they are allowed to remain nearly slack when " not required for use." The hammer faces are suitably formed to correspond with the shape of the nail. To regulate the number of blows given to each nail, a slide is raised by a ratchet arrangement, and tripped when it reaches a certain height, this distance which it falls being regulated by a lever. When the slides falls, it throws into action the stop motion of the hammers. The slide can be shifted without stopping the machine. The nail rod is fed in by fluted feed rollers, operated by a ratchet motion.

[*Printed*, 1*s*. 10*d*. *Drawings*.]

A.D. 1868, April 21.—No. 1299.

RENSHAW, Arthur Dallison.—(*Provisional protection only.*) —Horse clipper.

The fixed cutters are formed on the edge of a plate or rigidly affixed thereto. The reciprocating cutters are similarly constructed. The motion of the latter is regulated by guide pins on the fixed plate fitting in slots in the other plate. The two cutter plates are kept together by an "adjustable "presser bar," of which one end rests on the handle mounted on the fixed plate, while the other presses on the reciprocating cutter, being kept down thereon by a screw in the fixed plate. The end of the bar is fitted with a roller or other antifriction gear. The apparatus is driven from a roller "supported to turn in a bearing secured by a strap "around the waist of the operator. Upon the barrel is "wound a cord whose end is brought into a convenient "position to be pulled by the hand of the operator. The "barrel is turned in one direction by unwinding the cord, "and in the other direction by a spring." The motion is imparted to the cutters "through an elastic or weighted cord "or band which is connected to an eccentric, or cam, or "lever fixed on any convenient part of the cutting apparatus." "The cord or string which passes round the pulley "fixed on the eccentric is extended through the handle, "which is made hollow and provided with guide pulleys." This arrangement and the weights on the cord allow the apparatus to be moved about without interrupting the transmission of motion.

The cutters may also be operated by any suitable driving power, or they may be operated by a hand lever direct. The apparatus may be fitted with a cover, which may also be arranged to serve in place of the presser bar. Antifriction balls are interposed between the two cutter plates.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1868, May 29.—No. 1772.

GRIFFITHS, Henry, and WISHART, Frederick Augustus.—Horse clippers.

Three machines for the purpose are described—

1. A "spiral" cutter is mounted to revolve against the edge of a fixed blade upon which is fixed or formed a comb. The "spiral" cutter is actuated by a handle mounted on a frame carrying both cutters and operating the same through suitable band or spur gearing. The cutter may also be driven

by clockwork or by any suitable motive power acting through bands and pulleys, or by means of rollers rotated by contact with the surface over which the apparatus is moved. A guard is mounted over the spiral cutter. The fixed cutter may be of any suitable thickness and of various shapes.

2. The "spiral blade" "works with a partially circular "motion upwards and downwards," motion being given thereto "by means of a hand lever for the operator to push "backwards and forwards or upwards and downwards as "the machine is arranged for."

3. The cutting blade is flat, and is pivoted to the fixed blade; motion is given to it by a handle, by which a shearing action is given thereto.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1868, June 4.—No. 1835.

ASHTON, Joseph.—Horse-shoes.

The shoes are made with "tooth-like projections and points "arranged alternately." The "tooth-like projection at the "front of the shoe" is by preference "larger than the other "similar projections." "The shoes may conveniently be cast "in malleable iron, or they may be struck up or pressed in "swages or dies from bars of wrought metal, or bars may be "rolled with the projections upon them, and be subsequently "bent to the form desired."

[*Printed*, 10*d*. *Drawings*.]

A.D. 1868, June 15.—No. 1947.

LEONARD, William.—"Horse collars."

The collar has a "desiccative or medicated" lining, made of canvas, &c., coated with "vulcanized caoutchouc or gutta-"percha containing sulphur or other proper medicament." India-rubber cloth prepared in any usual manner may be employed. "The term desiccative" "has reference to a lining "containing a substance like sulphur, for instance, which "when applied to a wound has a tendency to dry or render "hard the matter excluded from it, and thereby aid in form-"ing or preserving a scab on such wound."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1868, July 2.—No. 2122.

JOHNSON, John Henry.—(*A communication from François Lebacq.*)—Horse-shoes.

No nails are used to secure the shoe, but between the hoof and the shoe there is interposed "an adhesive substance, the "base of which is either caoutchouc or gutta-percha, which "firmly unites the shoe to the foot." "To increase the "adhesion the shoe is provided with a projecting rim on its "circumference which surrounds the hoof, and it has also a "dovetailed or other shaped groove or recess formed therein, "into which the adhesive substance flows. Notches or indentations are also made in the hoof, which the adhesive "substance entering firmly secures the shoe to the foot." Instead of the groove, notches may be used "disposed in "juxtaposition to the notches or indentations formed in the "hoof." Upon the edge of the rim may be formed a number of "projections or dog teeth bent round so as to enter the "hoof." "There may also be adapted to the shoe a calkin" "the curved head of which penetrates into the rind of the "hoof, whilst its right-hand extremity is maintained between "the shoe and a corresponding part of the circular rim bent "down for the purpose." "The back part of the head of the "calkin is slightly chamfered, so that it is sufficient, after it "has been put in its place, to beat down slightly the corresponding lateral parts of the shoe in order to completely "secure it in the place it is intended to occupy and prevent "the possibility of its coming out." Or there may be a "tack "or point at each side of the circular rim," which "when the "rim is beaten down penetrates into the rind of the hoof and "fixes the shoe."

These methods of securing the shoe may be employed without the use of adhesive material.

"The semi-annular web which forms the dovetailed groove "in order to retain the adhesive substance" is "straightened" and "enters itself into the rind of the hoof, which it maintains "continually in its normal state; it may even in some cases "remedy previous accidents." With this arrangement the circular rim may be "wholly or partially dispensed with in "the case of certain diseases of the horse's foot."

A "frost shoe" is described, "in which nails and screws

" are entirely dispensed with." It is disposed so as to receive " a greater or less number of steel buttons or points" and is provided "in addition to its circular rim and web, with a " series of bulges or projections on its under side, recessed at " the centre for the purpose of receiving the steel points, " such bulges or projections serving to increase the thickness " of the metal at the parts where the steel points are to be " applied. The shoe is also perforated at these parts to " facilitate the expulsion of the calkins after they have been " worn out. The body of the steel points or buttons is made " of the form of two truncated pyramids placed opposite to " each other end to end, and so disposed that the projecting " angles of the one correspond to the flat faces of the other." A modification of this arrangement consists " in forming in " the shoe a lateral mortise of a dovetailed form to receive " the steel button," or " the steel calkin is held in its place " by means of a key passing through holes made in the " circular rim and in the bottom of the shoe and a recess in " the steel calkin."

[*Printed*, 10*d*. *Drawing*.]

A.D. 1868, July 16.—No. 2245.

DAVIS, Samuel.—(*Provisional protection only*.)—" Clipping " horses, sheep, or other animals."

The implement is worked with one hand. It consists of a comb blade, over which works a cutter blade. This latter is " simply a lever actuated by the thumb, fingers, or one hand " of the operator." " A spring is employed to move the " upper blade or cutter back to its normal position." Or " the upper cutter may be arranged to act as a slide in place " of a lever." " It may be formed with one or several cutting " edges."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1868, August 22.—No. 2620.

THOMPSON, Henry.—Roughing horses.

Roughing pieces are fitted to the shoes. Various methods of attaching them are figured and described. They are made with chisel edges. Two are attached one on each side at the hinder part of the shoe, and one or two at the toe. The hinder pieces are made so that they lap over the inner edge of the shoe, and rest against it, or in notches formed therein. They are forced outwards against the edge of the shoe by screws acting against a metal frame which carries the front roughing piece, and the front part of which bears against the inner edge of the front part of the shoe. Or the front piece may also be fitted with a screw. Or there may be two pieces in front, each fitted with a screw. Other holding screws are used to keep the screws on the roughing pieces from working loose.

[*Printed,* 10*d.* *Drawings.*]

A.D. 1868, September 8.—No. 2768.

COTTAM, Edward.—Making horse-shoes.

Improvements upon No. 251, A.D. 1861.

1. "Rolling two bars together, that is to say, by the same " rolls, the two bars when rolled being united. The rolls " are formed with raised surfaces and indentations corre- " sponding to the section of iron required."

2. To form the "raised surfaces" above mentioned, pieces of steel are let into the roll. The roll is formed with dovetail recesses and the pieces of steel are slit at their inner end. Wedges are placed in the slits, and on driving the pieces home the ends are expanded by the wedges and fill out the dovetails.

3. Bending horse-shoe blanks. A sliding block, carrying a shaping piece, travels between two pair of rollers, each pair mounted on a pivoted piece on each side of the shaper. As the shaper forces the blank between the rollers, these close upon it, and cause it to assume the form required. Pivoted pieces without rollers may also be employed.

4. Rasps "with a safe edge flange" are used for preparing horses' feet.

5. Pieces of hardened steel are let into the shoes to "equalize " the wear."

[*Printed,* 8*d.* *Drawing.*]

A.D. 1868, September 11.—No. 2807.

ROBERTS, John.—(*Provisional protection only.*)—Horse-shoes.

It is proposed to employ a piece of leather or other suitable material "of the same shape and size as the hoof of the "animal to which it is to be applied, the said piece of leather "or other material being formed open at the back to allow "the animal's foot to be inserted thereinto; this piece of "material is rivetted to the turned-up edges of a flat plate of "sheet metal, and to this piece of metal an iron shoe of the "ordinary kind is rivetted or otherwise securely fixed; a "strap and buckle or other suitable fastenings are fixed near "the edges of the open part of the before-mentioned piece of "material for securing the same on the animal's foot."

[*Printed, 4d. No Drawings.*]

A.D. 1868, September 18.—No. 2878.

CLARK, William.—(*Provisional protection not allowed.*)—"Spring boots for horses."

The invention "has for its object the strengthening and "support of horses' weak legs, sprained sinews, tendons, and "ligaments, and the protection of the bones of the leg." A boot is formed with a pad or an inflated cushion of india-rubber &c. "so arranged as to protect" the parts above mentioned. The pad may be separate from the boot or formed therewith.

[*Printed, 4d. No Drawings.*]

A.D. 1868, September 30.—No. 2999.

DALRYMPLE, George Augustus Frederick Elphinstone.—(*Provisional protection only.*)—Clipping horses, shearing sheep, &c.

The apparatus "consists of a revolving knife or knives, "which may be circular or in the form of segments of a "circle. The knife or knives is or are placed in a metal case, "the edges of which are formed at the front or cutting side "into teeth or fingers. These teeth or fingers are blunt at "the point, but the inside edges are sharpened towards the "inside of the case, so that when the instrument is pushed "forward by the operator, who holds the machine by a handle,

" the hair or wool is divided by the teeth and cut by the " circular or segmental knife or knives which revolve on an " axis fitted with a driving pulley actuated by a cord or band " which passes through the handle of the apparatus. To " admit of this the handle is not fixed in the same plane as " the case but higher, much in the same manner as the handle " of a mason's trowel. The apparatus may be driven by hand " or motive power" and "the driving band is carried by " guide pulleys fixed in the handle of the machine, and may " be made to pass round an intermediate pulley attached to " an elastic spring situated between the motion and the apparatus."

[*Printed, 4d. No Drawings.*]

A.D. 1868, October 24.—No. 3250.

SPRATT, James.—"Food for horses, cattle, game, poultry, " and other domestic animals."

The fruit of the date palm is used in the preparation of the food. "Such fruit being very wholesome, imparts tone and " vigour to the horse and dog, and causes great fecundity " to all kinds of game and poultry." The fruit is mixed with flour or other farinaceous substances, grains or seed, "meat " or its residuum after boiling down," oil cake, sulphur, spices and "any saccharine substance." The proportions preferred are, 10 parts fruit, 70 parts flour, &c., 1 part malt, 1 part cocoa berrries, 1 part oil cake, 20 parts "meat or its residuum" a "handful each of sulphur or iron suitably prepared," and spices and sugar enough to render the compound palatable. For herbivorous animals the meat is omitted and the quantity of dates and flour increased. The ingredients are mixed with water into a paste, made into cakes or biscuits and baked. After this they may be ground up.

[*Printed, 4d. No Drawings.*]

A.D. 1868, October 27.—No. 3281.

GEDGE, William Edward.—(*A communication from Charles Louis Weisgerber and Eusèbe Schilt.*)—(*Provisional protection only.*)—"Salt stones or lumps of salt for consumption by " cattle, sheep," &c.

The "salignons" or "salt stones" are intended to be supplied to animals to keep them in health; "crystals of sal "gemma, a mineral salt" (rock-salt) are ground between crushing rollers. The powder is mixed with water, pressed into moulds and dried. The "stones" thus formed are fitted into boxes fixed in the stall "giving it a horizontal position "for horned beasts and a vertical position for horses as being "that in which these animals may most readily lick the salt."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1868, November 18.—No. 3510.

BASSETT, WILLIAM THOMAS.—"Washing, cleansing, and "dressing sheep or other animals."

The animal is carried by an endless travelling band through a series of annular chambers from the inner surface of which numerous streams of water are projected on the animal as it passes along. These chambers are mounted over a tank with compartments corresponding with the chambers. In each compartment is a centrifugal pump, which forces water into the chamber above it. The water from each chamber may pass into the next compartment, so that the same water is used over and over again. The water from the last chamber may be discharged into a settling tank, from which the supply is drawn from the first tank. The water thus becomes highly charged with matters extracted from the wool. The different compartments of the tank also communicate with one another. The endless band is furnished with clips to hold the animal. The ends of these work in guides, so that they close upon the animal as it is placed within them, and release it when it reaches the discharge end of the apparatus. Here it falls into a tank or pond of water from which it walks up a sloping gang-way provided for the purpose.

The apparatus may be employed for "applying dressing or "other liquids to the skins or fleeces of animals for the "treatment of scab and other diseases." It may also be used for "forcing annual jets of air in place of water upon the "skins or fleeces of sheep or other animals to dry the wool "or hair after the process of washing."

It may be modified in various ways as regards the supply of water, the arrangements for securing the animal, &c.

[*Printed*, 1*s*. 6*d*. *Drawings*.]

A.D. 1868, December 2.—No. 3664.

TIDMARSH, John.—Clipping horses, &c.

Instead of the comb plate and the cutter plate being made with the same number of teeth, the comb has a greater number of teeth, and the teeth by preference have "the same "distance extending between the top and bottom of each "tooth." The cutter plate and the comb plate are segmental in form. The drawing shows three cutter blades which are either formed with the plate or attached thereto. "Their "blades are bevilled to bring them to cutting edges so that "they will cut on both sides." The cutter blades and the comb teeth "do not radiate from a common centre." The cutter blade is "somewhat arched, curved, or bent" "so that "its top and bottom ends may rest on and press against the "top and bottom of the comb plate." The two plates are kept up against one another by a set screw. They are operated by handles, and their relative motion is controlled by studs on the comb plates.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1868, December 5.—No. 3704.

GIRDWOOD, Robert.—Rollers for crushing and compounding.

The apparatus is intended among other purposes for compounding "sheep smears." Two rollers are suitably mounted and driven, one of the pair being driven by contact with the other. The roller that is not directly driven has a longitudinal motion given to it by one of various methods. The spindle of the roller is mounted so as to slide longitudinally. An eccentric works a bell-crank lever the end of which is attached by a connecting rod to a fork fitting between collars on the roller spindle. Or the sliding axis may be connected directly to a crank on a crank shaft driven from the main shaft. Or a fixed pin on the framing may fit in an undulating groove on a pulley mounted on the sliding axis.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1868, December 7.—No. 3717.

CHISWELL, William.—(*Provisional protection only.*)—Roughing horses.

A "three cross iron bar or bar plate is made" in two separate pieces "with shoulders to fit inside the shoe and flat "at the ends, and so arranged by means of a screw and nut "as to take a lever bearing on the shoe itself." Into this steel pegs are screwed to the number of three or four or more. The "rough" may be made in sizes and numbered.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1868, December 7.—No. 3721.

SIMONS, Edward. — (*Provisional protection only.*) — Horse shoes.

The shoe is intended for use in frosty weather and also as a temporary shoe in case of accident. It "consists of a light "steel or wrought iron frame provided with a ball plate for "covering in the hollow part of the hoof, and three or more "'calks' or projections beneath for giving a firm foot hold. "A toe cap projects upwards in front over the toe of the hoof "and two heel clips are provided at the rear, the said heel "clips being made of spring steel, and connected together by "a screwed and slightly cranked bar, by turning which they "can either be separated for placing the shoe on the hoof, "and removing the same, or closed in for fixing the shoe." "When no ball plate is required the frame may be made in "the form of an ordinary horse-shoe, but composed of two "parts hinged together at the toe." Also "the ball plate "is divided longitudinally and hinged together at the toe, "being provided with a spring which has a constant tendency "to close the joint of the ball plate." Also the "ball plate" may be of leather, &c. and "an india-rubber band passing "round the hoof and connecting the toe clip and heel clips "may be used."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1868, December 11.—No. 3768.

HOLDER, Thomas, and DOVER, George.—Roughing horses.

A clip is employed which fits over the front portion of the shoe. Two projecting pieces on the clip rest against the front of the shoe and the hoof, and an ˥-shaped piece fits over the inner edge of the front part of the shoe, and is secured to the clip by a nut working on a screwed pin on the clip. Taper studs are dropped into taper square holes in the clip, so that while the clip is on the shoe they are prevented from falling out.

[*Printed*, 8*d*. *Drawing*.]

1869.

A.D. 1869, January 1.—No. 5.

SMITH, George.—(*Provisional protection only.*)—" Clipping " horses and sheep, &c."

he following portion of the Provisional Specification refers to this series.

" For the purpose of clipping horses and sheep I form a " small case of iron, and by a barrel spring turn a centre " spindle, on which is also fixed a pinion wheel that drives " two pinions right and left of the first pinion ; on the spindles of these outside pinions I fix pullies for a band knife " which is to pass between a double comb ; the double comb " is roughed or barbed on the inside so as to detain the hair " or wheel when the knife is brought by forward pressure " into contact with the hair or wool, and is thus cut. The " knife band will be brass, copper, or leather with steel face " or cutting part."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, January 4.—No. 21.

McKENNY, James.—Horse shoes.

An "artificial additional frog or sole piece" of leather, india-rubber, &c., is fitted to the shoe in any suitable manner, being attached thereto by pins, or otherwise. The sole piece is hollowed out on its upper side to fit the frog, and may have a thin metal plate fixed to its under side.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1869, January 18.—No. 160.

PRICE, James William.—Horse-shoe nails.

The rod from which the nail is to be formed is carried by a cradle mounted on guide rails, and having motion given to it by a fixed screw engaging with a nut on the cradle. The cradle has mounted upon it clips which hold the bar. One end of the bar passes through a furnace, in which it is kept at the required heat. Just beyond the furnace is a pair of anvils, one shaped as required for the edge of the nail, the other for the flat side; over these anvils hammers are mounted, and are actuated by tappets and springs. The rod receives a rotary to-and-fro motion from a cam and connecting rod, which brings it alternately over each anvil. As soon as each nail is finished, one of the anvils, which is mounted so that it can be lifted by a cam, is caused to rise and bring a cutter thereon against the nail, so as to sever it from the rod.

[*Printed*, 1*s*. 10*d*. *Drawings*.]

A.D. 1869, January 21.—No. 199.

LAKE, William Robert.—(*A communication from Edwards Henry Rawlings.*)—"Apparatus for shearing animals and "skins."

An arm carrying a single cutting blade is caused to traverse over a comb plate. Various devices for effecting this are described.

1. A sliding handle has a rack upon it which engages with a toothed wheel mounted on the comb-plate. The other side of the wheel engages with a second rack, affixed to the cutter blade.

2. A crank handle imparts rotary motion to an axis on which are mounted four arms carrying cutters.

3. A handle pivoted on the comb-plate carries at its end a segmental rack which engages with a corresponding rack formed on the end of the arm carrying the cutter.

4. A screw is mounted on the axis of the cutter arm, and to this a rotary motion is imparted by means of a nut travelling to and fro thereon.

5. The cutter is operated by a sliding "piston" which is brought back by a spring.

6. By means of a double rack and a partly toothed pinion the rotary movement of a handle is caused to impart reciprocating movement to a sliding frame. This frame by means of a connecting rod works a crank. A bevel pinion on the crank shaft engages with another bevel pinion on the axis of a pair of arms carrying each a cutter at its end.

In several of the above described arrangements, a bow and pulley may be substituted for the mechanism by which rotary motion is given to the axis on which the arms carrying the cutters are mounted.

[*Printed*, 1*s*. 2*d*. *Drawings*.]

A.D. 1869, January 22.—No. 201.

CUNNINGHAM, Albert Berwick.—(*Provisional protection only.*)—"Throwing horses and other cattle for veterinary " purposes."

"This apparatus is constructed with a flap or door fitted " with a pad, and hinged or otherwise suitably attached at " one side to the side of a frame fixed in the floor or paving, " or to the floor or paving itself, so as to move up and down " in a similar manner to that of a trap-door. This frame is " made of a size to receive the flap or door, and is let into a " recess in the floor or paving, so as to allow the flap to sit " flush with the other part of the floor or paving." When the horse is to be cast, the flap is raised to a vertical position, and the horse is attached thereto. An additional flap may be used to " form an enclosure for the horse in conjunction with " the first flap." The flap may serve as an operating table, " by fixing legs, trestles, or other suitable supports to it, and " then allowing it to pivot on the legs, trestles, or other sup" ports when lowered."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, January 29.—No. 286.

MALLARD, Adolphe.—(*A communication from Mallard père, Guerrièro, and Isabel*).—(*Provisional protection only.*)—Horseshoes.

"The invention consists in roughing the surface of the " shoe next the ground by forming grooves or channels " therein, in any suitable manner, thus producing ridges or

" ribs on the surface of the shoe." The grooves are by preference parallel, but they may also be radial or otherwise formed. In making parallel grooves it is preferred " to commence at the toe of the shoe, so as to produce ridges extending completely across over the whole surface of the shoe." The nail holes are at the bottom of the grooves. The grooves are formed " by means of a forge hammer " or otherwise. The shoes are by preference steel-faced.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, February 6.—No. 369.

OFFORD, James Sharpen.—Horse clipper.

The hair is held between a pair of comb plates. One is fixed, and has an " upright rib or flange on each tooth, leaving a receptacle thereon for the teeth of a moveable plain " comb shaped holder " which is kept in contact therewith by a spring. The movable comb or holder is pressed back by " a lever working against the opposite side of the holder, " which lever at the same time by means of an upright pin " thereon forces in an oblique direction a cutting blade over " the closed teeth of the comb and holder." " The cutting " blade is directed in its movement and kept to its work by a " covering plate and two tightening screws."

[*Printed*, 10*d*. *Drawing*.]

A.D. 1869, February 6.—No. 373.

EDMONDS, John Thomas.—(*Provisional protection only*.)— " Apparatus for giving medicines and drinks to horses and " other cattle."

A tube of metal, or partly of metal and partly flexible, is employed. The size of the tube is such as to contain a dose. In the tube is " a piston or plug connected to a long rod passing through a stuffing box at the other end, and surrounded " by a second tube outside, and beyond the first and larger " tube a spring is placed in the smaller tube and round the " piston or plug rod, which always gives the rod a tendency " to escape from the tube. There is a stop catch in the smaller " tube for holding the piston rod when it is pressed in, and " which at the same time forces the plug at the end of the rod " against the end of the larger tube or cylinder, and closes

" the end thereof, the end being provided with a sort of seat " for the plug to fit into. A small air tube leads from the " interior of the large tube to the outside, and which is placed " by preference near the stop catch on the smaller tube." " The end is placed in the mouth of the animal, and thrust " down below the tongue or resting on it, the air hole being " closed by a finger of the hand." " To deliver the dose, the " stop catch is released, the air valve is opened, the spring " expands, forces back the piston rod, the aperture in the tube " is thereby opened, and the dose flies down the throat of the " animal." The tube may be curved and have a handle attached thereto, a spring lever being used to operate the piston. For giving balls, a tube with a spring piston is used. A catch holds the piston back, and on releasing this the ball is expelled down the tube into the animal's throat.

[*Printed, 4d. No Drawings.*]

A.D. 1869, February 15.—No. 454.

HAYCOCK, William, and CARTER, Walter.—(*Provisional protection only.*)—Horse-shoes.

The object of the invention is to prevent horses from slipping "when passing over slippery ground," and it consists in " a novel application of pieces of iron or steel (commonly " called caulks or spikes) to the shoes of horses, such caulks " or spikes being firmly secured thereto by means of screw " bolts, revets, or wedges."

[*Printed, 4d. No Drawings.*]

A.D. 1869, February 20.—No. 532.

MORL, James Hancock.—Hair cutting machines, applicable for shearing sheep and other animals.

A series of helical blades are mounted on a handled spindle, to which motion is given by a pulley. These blades act against a fixed comb-plate. The bearings of the spindle are fitted with springs, so that the knives yield when an excess of hair gets into the apparatus. The springs may be helical, rubber, &c.

[*Printed, 8d. Drawing.*]

A.D. 1869, March 2.—No. 636.

HALL, James.—(*Provisional protection only.*)—Horse-shoes.

Holes are drilled in the shoe, into which plugs are screwed. To rough the shoe, these plugs are taken out, and "screws "carrying sharp metal points can be screwed into their place." "The screw plugs are each made with a deep slot across it, "so that as the shoe and the screw plugs" "are worn away "by use, there shall always be a slot across the screw plug, "by which it may be screwed out with an ordinary screw-"driver."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1869, March 3.—No. 640.

CLARK, William.—Clipping horses, &c.

A lever pivoted on the lower plate of the clipper, and connected to the upper plate by a pin, is operated by means of a zig-zag cam or cam groove mounted in bearings at the rear of the comb plate. The cam is driven direct by a handle or by multiplying spur or band gear. The end of the lever working against the cam may carry a friction roller. "To facilitate "the motion of the upper plate on the lower one," "one or "more spheres of any suitable material" are mounted "in a "groove formed in the lower plate, the top plate resting on "the said spheres." Oil reservoirs are fitted on the upper plate, and have openings which permit the oil to pass into the space between the plates; or the handle of the apparatus, which is mounted on the upper plate, may be hollow, and serve as a reservoir. "Instead of the cam being made to act "continuously on the lever," there may be "a projection at "each angle of the said cam, which projections alternately "strike the lever to the right or left;" or the lever may be moved in one direction only by the cam, a spring being used to return it.

[*Printed*, 10*d*. *Drawing.*]

A.D. 1869, March 5.—No. 671.

KNIGHT, Henry. — (*Provisional protection only.*) — Horse clipper.

A toothed cutter plate works with a reciprocating motion over a comb plate, the teeth of both plates being similar. An axis rotated by a winch is by means of a three-sided cam caused to give a reciprocating motion to the cutter, or the handle may be attached directly to the plate, and itself moved to and fro ; or a reciprocating movement may, by means of a handle, be given to a screw mounted on the comb plate, and engaging with a nut on the cutter plate. Or "a right and left " handed screw thread may be cut on the same cylinder, and a " guide on the cutter made to engage therein. By this " arrangement the required reciprocating motion is obtained " by continuous rotation of the cylinder in either direction." A single cutter may be employed instead of a series, and then a screw is used "having several threads, so as to produce as " quick a motion as possible." By means of the screw "the " single cutter is made to travel over the teeth of the toothed " plate from end to end." The teeth "taper at the point, and " the lower angle of each tooth is slightly rounded." "The " spaces between the teeth of the cutting plate are inclined " backwards so as to permit of the ready escape of the hair." An adjustable handle is mounted on the comb plate.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1869, March 27.—No. 922.

DOWNIE, Hay, and HARRIS, Isaac Blue.—Horse-shoes.

The shoe described is a combination of metal and india-rubber, or other flexible material. "The metal portion of " each shoe is made in one piece," and the india-rubber, &c. is "so fitted or combined therewith that it projects slightly " beyond the metal or the treading surface."

The improvements consist :—

1. "In constructing the metallic portion of a shoe adapted " to be attached to the hoof by nails, or in any other convenient manner, with one or more grooves or recesses on the " treading surface, and in fitting therein a piece or pieces of " india-rubber or other elastic or flexible material."

2. In constructing the metallic portion "of a shoe fitted " with a treading ridge or surface, preferably at the outer " edge, and a flat inner web, and in combining therewith " india-rubber" "in such manner that it surrounds and is in

" contact with both of the flat sides, and also the inner edge " of the said web." The rubber is " carried between the " metal portion and the hoof, so that the fastening nails pass " through it." " That portion of the rubber which is interposed " between the metal and the hoof " is " of sufficient hardness " to obviate lateral working." " To prevent sand from reach- " ing the sole of the foot, and to prevent balling," the rubber " may be fitted so that it extends backwards and fits close to " the ball of the frog of the foot."

[*Printed*, 8*d*. *Drawing.*]

A.D. 1869, March 29.—No. 941.

LAKE, WILLIAM ROBERT. — (*A communication from Arlon Man Polsey and Silas Edwin Chase.*)—Horse-shoe nails.

Iron bars are rolled down into strips, and these strips are submitted to the action of punching dies, by which blanks for the nails are punched out. These blanks are treated by a rolling machine, by which their shanks are elongated; " then the " elongated banks are compressed at the point by a punch or " plunger acting against a solid bed so as to bevel the point " ends across, which results in spreading the points laterally," " and giving a longitudinal curvature to the shank." The blanks " are then presented over an open die made in a hard " steel bed corresponding to the form which the finished nail " is to have when viewed flatwise, and a die or punch corres- " ponding in form is then brought down on any elongated " blank which may be presented over the open die." This removes the superfluous metal at the point, and straightens out any small irregularities. The nails thus formed are " tumbled with others in a rotating barrel, to remove any " slight roughness." The machine in which the blanks are elongated has " a series of pairs of rotating dies, in which " series the parts which operate on the metal to be wrought " overhang their bearings, the pairs of dies in the series being " arranged so that each pair is at right angles to its preceding " and succeeding pair or to either, and so closely together " that each pair delivers the nail blank to the succeeding pair " without allowing the blank to fall from one to another pair, " the pairs being provided with die grooves shaped so as to " receive the heads of nail blanks without operating thereon

" to materially change their form, the said grooves being also " shaped to operate on the shanks of such blanks to elongate " them by each pair of dies in rotating."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1869, May 5.—No. 1388.

WELTON, Thomas.—" Applying oxygenated and other gas " charged charcoal for curative and other purposes."

The invention " consists in the means for rendering charcoal, soot, or other charred matters applicable to the curing " of diseases in men and animals," and for other purposes. Charcoal, ground or broken up small, is heated and charged with " such gas as may be required, or mixture of gases, or " vapour of metal or metals, or drugs, or vapour of phosphorous, bromine, ammonia, sodine, or other materials " which the charcoal by a well-known law will then absorb." " Pills, cakes, troches, lozenges, capsules, or biscuits of charcoal, or charcoal mixed with other materials," may be baked and " charged with the gas, vapour, or drugs." The " oven " or other vessel " containing the biscuits, &c., may be exhausted by an air-pump, and the gas, &c. then admitted thereto. The inventor also claims " the right to electrise such " charcoal cakes or biscuits," &c.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, May 14.—No. 1485.

HEDLEY, Francis.—Horse-shoes.

"This invention consists in constructing horse-shoes flanged " on the inside surface, or so that the inside edge is considerably thicker than the outer edge." The nail holes are in the outer flange. The surface next the foot may be " either " perfectly flat or slightly hollowed."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1869, May 19.—No. 1546.

ROBERGE, David.—Horse-shoes.

The shoe is " formed so as to take a bearing centrally below " the foot in order that the hoof may assume the most natural " position, and throw the weight of the animal in the proper "proportion on the respective parts." The shoe has a "cross "bar and a central calk to give this central bearing," or it may be "thickest towards the back and the inner edges," and "the outer edges of the shoe both towards the back and the "inner edges" are rounded off. "This may be still further "extended by a plate of metal of a dome form applied to the "under side of the shoe." To ascertain the proper shape of the shoe for each case, a "test shoe" is employed. This is made with hind calks, a "centre calk," and "a short toe calk "set towards the back or inner edge of the shoe." The centre calk is about the same length as the hind calks, and "is placed "as nearly as possible below the ball or centre of the ankle "joint of the hoof." "By wearing this shoe a few days it can "be ascertained in what position the under side of the hoof "should stand to the level surface." A shoe is then made to correspond. This shoe can also be employed in cases of disease. The central calk may be made "of two cross pieces "that are clamped together by screws, the upper of the cross "pieces setting under the inner edge of the shoe, so that "this central calk may be movable, and can be applied whenever desired."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1869, May 22.—No. 1585.

HUGHES, EDWARD THOMAS.—(*A communication from John Starr Griffing.*)—Horse-shoe nails and machinery for making the same.

Two sets of machines are described.

1. The rod is rolled between two pairs of rollers, at right angles one to the other. The second pair is provided with "projecting chisel-shaped cutters" that sever the blanks between the heads. The first pair of rollers are made with flanges "which set against the sides respectively of the con-"tiguous rollers so as to leave the space for the nail rod." Both pairs of rollers are set up by set screws. The blanks are then treated in a "rumbler" from which they are delivered direct or by an elevator to a shoot which delivers them to a wheel with an "inclined edge" "filled with cavities" of a shape to receive the nails. This wheel is revolved by a ratchet movement, and the nails are taken therefrom singly by

a hook and carried to a slide which feeds each nail head first to a pair of rollers. These are shaped so as to roll out the shank. The nail is then delivered by a second rumbler and wheel to a pair of rollers which roll down the point. A grooved wheel or other suitable device next carries the nails against a reciprocating file which dresses the points, the nail being meanwhile held down by a "flanged strip." Finally the nail is acted on by a pair of horizontal dies and a hammer while it lies on an anvil from which it drops as the dies open.

2. The rod is partly rolled into shape, the nail-heads being formed thereon. It is then delivered by hand or otherwise to another pair of rollers formed so that projections thereon take against the heads and so feed the rod along. As the blank passes out beyond the rollers it comes over two sets of cutters actuated by the same lever arm. One of these cuts diagonally across and severs the blanks at the point. The other severs them at the head. The nails are then placed "by hand or "automatically" in notches in the rim of a circular revolving carrier plate. This carrier, which is driven by a ratchet arrangement, carries each nail, first between a pair of horizontally acting jaws which rise and fall sufficiently to seize and to clear the nail, then between a pair of vertically acting dies, and then to a cutter which forms the point. The three movements are all effected from a single "head" moving in vertical guides, and the three portions of the apparatus act simultaneously but on three separate nails. The nail is finished by a reciprocating file, it being held by passing under a fixed plate. After this the nail is carried over an opening through which it drops.

[*Printed*, 3*s*. 4*d*. *Drawings*.]

A.D. 1869, May 29.—No. 1655.

HANCOCK, James Lamb.—(*Provisional protection only.*)—Clipping and trimming horses and shearing sheep.

One of the blades of the shears used is made with teeth upon it, so as to dispense with the need of a comb. The teeth have cutting edges. "The plain blade acts upon the comb "plate a short distance above the bottoms of the teeth." The teeth "may be secured to the back of one of the blades for the

" same purpose by solder, screws or rivets, or removable by " being slid in."

[*Printed, 4d. No Drawings.*]

A.D. 1869, June 2.—No. 1710.

SIMPSON, ARTHUR LANKESTER.—(*Provisional protection only.*) —Sheep dressings.

The composition is to be used for treating sheep attacked by the fly, " destroying the maggots and proud flesh in wounds " on other animals," &c.

Three compounds are described,—(1.) Corrosive sublimate, 64 to 128 parts ; " creosote, carbolic acid, or phenol " 1 to 3 ; sugar, 96 ; starch, 8 ; gum dextrine, gelatine or isinglass, 32. (2.) Corrosive sublimate and carbolic acid, &c. as in (1.) ; soap, 96 ; " spermaceti or stearine," 40. (3.) Corrosive sublimate and carbolic acid, &c. as in (1.) ; wax, 15 ; tallow or lard, 15 ; " gum assafœtida," 6 ; " oils," 100.

The ingredients are in each case melted and mixed up with a " small quantity of colouring matter."

[*Printed, 4d. No Drawings.*]

A.D. 1869, June 5.—No. 1739.

DOWNIE, HAY, and HARRIS, ISAAC BLUE.—Horse shoes.

1. Using a shoe which is nailed to the foot in the usual manner and " combining rubber therewith in such manner " that a thick anti-concussion pad or ridge thereof passes all " round or partly around within the inner edge of the metal " shoe, and projects downwards beyond the metal." The rubber is also " carried outwards between the metal portion of " the shoe and the hoof, so as to serve as a bedding for those " parts." The " sole protector pieces formed with the anti- " concussion pad, and adjusted to fit close to the base of the " frog, can be used."

2. " Combining two side pieces of rubber " with a metal shoe. These pieces " rest against the sole of the hoof just " inside the inner edge of the metal portion ; they project " downwards beyond the edge of the said metal portion, and " are secured in position by a bedding flange, or two flanges, " which pass between the metal and the hoof."

3. Making the shoe with " one or more openings there-

" through," and "fitting rubber therein." "The rubber " bears directly against the sole of the foot and projects on " the treading surface beyond the metal. Flanges formed on " the rubber are led between the metal and the hoof."

4. Making the shoe with "thin horizontal webs at both " sides and a thick middle and toe piece," and "fitting both " of the flat sides and the inner edge of the said horizontal " webs, or the whole of the said horizontal webs, in or with " rubber to a thickness, by preference, a little more than the " thickness of the toe piece."

5. Fitting rubber to the shoe, "which while it fits the hoof " and projects beyond the surface of the metal is also formed " with a transverse heel bar." Or the whole shoe may be of rubber, "with the exception of a metallic toe cap."

6. "Employing rubber to fill up the whole of the space " within the shoe." The rubber "is so formed that it fits " close to the frog and sole of the foot, and on the treading " surface it projects beyond the metal."

Besides rubber, gutta-percha or "other elastic or flexible " gum, or other elastic or flexible substance, such as felt, " closely compacted woven fabrics," &c., may be used. The inventors "prefer vulcanized india-rubber for the anti-con" cussion pads and sole shields, and for the bedding flanges " closely woven fabric compacted with india-rubber."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1869, June 9.—No. 1783.

BISHOP, ELISHA. — (*Provisional protection only.*) — Sheep shears.

The shears are made "all in one piece of metal or at least " of several pieces so connected as to be the same in effect as " one piece; the handle part, which has a bow at the end, has " at that part a curve or loop, so that one part of the curve or " loop abuts against the other and thus acts as an efficient " spring in the opening and shutting of the shears. The " metal must of course possess sufficient elasticity to ensure " the required action."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, July 5.—No. 2026.

NEWTON, William Edward.—(*A communication from James Montgomery.*)—Manufacture of bar iron, &c.

For horse-shoes a bar of "tough fibrous wrought iron" is welded to a bar of "soft or semi-steel." The bar is then rolled so as to form blanks for horse-shoes, the harder iron forming the lower surface of the shoe.

A rolling mill for rolling iron into various shapes is described. Rolls for rolling horse-shoe blanks are fitted with dies for forming the heel calks and toe-pieces, and with cutting dies for separating the blanks. The die for forming the toe-piece also serves for "so compressing the bar at the toe, as to " make it very thin at this point in order that the shoe may " be made elastic, and adapted to expand or contract with the " horse's foot."

[*Printed*, 2*s*. *Drawings*.]

A.D. 1869, July 7.—No. 2046.

PRICE, Astley Paston.—(*A communication from Mathias Eugen Oscar Liebreich.*) — "Producing partial or complete " anæsthesia."

The anæsthetic may be used for veterinary purposes. It consists of "chloral or hydrate of chloral, or of trichloroacetic " acid, or of the salts or compounds of the same, either administered internally or by injection subcutaneously or otherwise."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, July 10.—No. 2084.

COUPER, James Blackwood.—(*Provisional protection only.*)—Horse-shoes.

The shoes are of india-rubber and metal. "An open frame " of metal is used, on both the upper and under sides of which " the india-rubber is fixed." "The metal is formed of the " proper width for the shoe, but the central part is left open " all round except at the curve or bend of the shoe on each " side, where it is strengthened by cross bars, and the space or " spaces thus left is or are filled with solid india-rubber or " other elastic material, the upper and under sides of the

" metal being as it were overlapped by the flange or extended " portion of the india-rubber." The shoe is secured by nails which pass through the metal and the rubber into the hoof. The india-rubber may be in several pieces, any of which can be renewed when worn out. Or the shoe may be "of one " solid piece of india-rubber," &c., with "a groove cut in it " horizontally all round the outer edge, into which groove a " rim or frame of metal may be inserted."

[*Printed, 4d. No Drawings.*]

A.D. 1869, July 10.—No. 2088.

LAKE, William Robert.—(*A communication from Ozial Adnah Howe.*)—" Machine for manufacturing horse-shoes."

The Specification refers to drawings, but none were filed therewith. The machine consists of:—" first a rotating die; " second a rotating pressure disc; third a rotating pressure " cone." A frame carries "a pair of pillow blocks in which " there is arranged a pair of rollers or shafts, the front ends " of these rollers being made to project a short distance in " front of the forward pillow block. On the front end of one " of these rollers a die is made in form like the inside and " under side of a horse shoe, the said die serves as a block " to turn the shoe on. On the front end of the other roller " an irregular eccentric wheel is made or secured." This is of such shape as to leave a space between its periphery and the die equal to the web of the shoe. Projections on the " eccentric wheel" serve to sever the blank when formed. " To " catch the end of the iron as it is thrust forward in the die " and to mark or stamp the shoe, there is a small pin set in " the shoe die which is forced in the end of the hot bar at the " moment when it is caught between the dies." To " complete " the shoe," a " cone on the end of the shaft" is arranged in " a sliding frame so as to bring the sides of the cone on a " plane with the face of the die and eccentric wheel," and geared "to rotate in the direction in which the shoe is carried " by the die. Now this cone if pressed forward against the " die with sufficient force will press the iron into it and make " its impress on the inside of the shoe, leaving the outside of " the shoe with a plain surface." To "make the chamber and " the crease and nail holes on the outside of the shoe," there is "an enlargement or swell and projections on the side of the " aforesaid cone."

[*Printed*, 6*d*. *No Drawings*.]

A.D. 1869, July 19.—No. 2184.

WILLIAMS, William. — (*Provisional protection only.*) — " Elastic horse boot."

The boot is " struck by a block or die out of 'vulcanized " 'india-rubber' or other elastic substance to the shape of the " horse's hoof so as to envelope the whole foot, sole, frog, and " nails. It is intended to be drawn on the hoof like the shoe " on the human foot."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, July 21.—No. 2217.

KNIGHT, Henry.—Horse clipper.

A reciprocating toothed cutter is connected to a comb plate by means of screws on the latter passing through slots in the former. The comb plate is also fixed to a frame, to which two lever handles are jointed. One of these levers " is jointed " to the case near its end, and at about an inch distant from " the said joint, and between it and the handle is a fixed pin " on the said lever, which pin engages in a slot hole in the " cutting plate." The other lever " is jointed to the case, " and has a fixed pin which engages in another slot hole in " the cutting plate, but the relative positions of the said pin " and joint" are " the reverse " of those in the other lever, that is to say, " the pin is near the end of the lever and the joint " about an inch distant therefrom and between the said pin " and the handle." " By opening and closing these levers," " the pins engaging with the cutting plate move in the same " directions, and the said plate is consequently carried across " the toothed plate in one direction when the handles of the " instrument are opened, and in the opposite direction when " the handles" " are closed." Screws are set in the fixed plate which bear with their heads upon the cutting plate to regulate the pressure of the same upon the fixed plate. The levers work through an opening in the bottom edge of the case. Curved pieces on the levers bear against pieces on the case to prevent dust, &c. entering. The cutting plate may be fitted with "moveable blocks, into holes in which" pins on the levers take, "instead of taking directly into slot holes" in the cutting plate. The blocks "are situated in slots in the " cutting plate, and have a slight play in the said slots in a " direction transverse to the cut of the said plate, so that as " the levers are opened and closed the said blocks rise and " fall in the said slots." The object of this is to prevent the lever pins wearing and "to ensure a smooth action" in the cutting plate.

Several modified forms of the apparatus are described.

1. The levers are circular ended, and are jointed on one and the same pin. The levers are connected to the plate at opposite sides of the joint, and the action is similar to that previously described.

2. One of the handles may be fixed to the case, the cutter being operated by the other. The handle of the last described arrangement may be mounted on the case at different angles, a number of holes being made in the case, in any of which the handle can be secured by a pin. This arrangement can be applied to any clipping apparatus with a fixed handle.

3. The apparatus can be made without a case, the levers being mounted on the fixed plate.

4. A "single cutting plate turning on a centre" may be used instead of a toothed cutter. The "tail end of the " cutting plate" carries an antifriction roller which runs on the fixed plate. Reciprocating motion is given to the cutter by levers mounted as in the previous arrangements, and connected to the cutter by links. The teeth of the comb plate are parallel instead of radial. The same arrangement may be employed with a "single or compound cutting plate turning " on a centre."

[*Printed*, 1*s*. 10*d*. *Drawings*.]

A.D. 1869, July 27.—No. 2274.

WINSHIP, James.—(*Provisional protection only.*)—"Preparation and application of medicaments."

The invention is available for "veterinary use." Paper or fabric is to be impregnated with the drug to be administered. It is also divided by lines indicating the dose to be taken, and stamped with the name of the medicine. The "medicated "paper" may be made up into books rolled into spills, or cut into "discs, lozenges, or other convenient form." It is used by swallowing the amount necessary, or steeping it in water and drinking the solution. For external use the solution is applied as a lotion, &c. The paper may be coated with gelatine, &c. "to prevent it from becoming inert."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, July 27.—No. 2279.

LAKE, WILLIAM ROBERT.—(*A communication from Edwards Henry Rawlings.*)—"Apparatus for shearing or clipping animals and skins."

The moving handle is pivoted to the comb plate. The end of it is prolonged and is connected by a link to the end of a lever pivoted on the plate. The other end of this lever is formed as a segmental rack. It engages with a similar rack on the end of a pivoted arm, the other end of which carries a cutter blade working over the comb plate. A bridge piece is fitted over the cutter blade, to keep it down to its work.

In a modified form of the apparatus the motion is given to the cutter arm by a parallel motion, the end of the connecting link carrying a pin which works in a slot in the comb plate for guidance. The end of the link is connected by a second link to the lever arm carrying the cutter.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1869, September 4.—No. 2611.

READE, WILLIAM HICKMAN.—(*Provisional protection only.*)—"Machinery for clipping and cleansing the hair of animals."

The invention consists in applying clockwork, &c. to clippers. The clockwork may be applied in any suitable manner, and may be caused to drive revolving cutters, or "blades or shears "acting scythe or scissor fashion." The Provisional Specification also refers to the "use and application of curry combs "or brushes specially adapted to the above machinery, to be "used for the purposes of cleansing the hair of animals or "otherwise."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, September 23.—No. 2766.

BADIOU, Jean François Régis, and BERNARD, François.—Horse-shoes.

1. Horse-shoes are made with "a sort of rib or pattern" on the under side, the remainder of the surface being recessed. The nail holes are "much nearer to the outer circumference " than in ordinary horses' shoes," and the heads of the nails are preserved from wear by their being in the recessed part of the shoe.

2. Machine for making horse-shoes. A "matrix" is mounted on a suitable bed-plate. The bar of iron to be shaped is held against the side of this matrix by a pivoted lever. Another lever pivoted at the centre of the matrix has pivoted upon it a T-shaped lever, the short arms of which carry rollers, and these, by being forced against the bar as it rests against the matrix while the lever arrangement is carried round the same, cause the bar to assume a shape corresponding with that of the matrix.

[*Printed*, 1s. *Drawings.*]

A.D. 1869, September 23.—No. 2769.

TRENCH, Frederic, and WARNER, Edward Charles.——(*Provisional protection only.*)—Horse-shoes.

" This invention consists in making horse-shoes entirely of " solid vulcanized india-rubber." The shoes are made "of " the same pattern as the different kinds of metal shoes now " in use, but somewhat thicker, say about two-thirds of an " inch in thickness." They are to be attached to the foot by nails.

[*Printed*, 4*d*. *Drawing.*]

A.D. 1869, September 25.—No. 2791.

MORE, John Walter, and NORMAN, John.—(*Provisional protection only.*)—Horse clipper.

A comb plate, with a fixed handle, has formed or fitted thereon "guides in which a slide having a suitable cutter " fixed thereto is capable of working freely to-and-fro." The " slide is provided with a pin or projection, which enters " a slot in one end of a lever working upon a centre of motion,

" and having a suitable handle formed on or fitted to the " other end thereof." " At each end of the comb a suitable " distance is left without teeth, so that as the cutter comes to " each end of its travel it shall be free of the teeth, and " thereby prevent its dragging the hair at those parts." The teeth of the comb are by preference " comparatively fine and " blunt at the end."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1869, September 28.—No. 2824.

NEWTON, ALFRED VINCENT.—(*A communication from Jacob Davy Kingsland.*)—Horse-shoe nails.

The bars from which the nails are to be punched are rolled of a special form, thin along the middle and with a ridge along both edges from which the heads of the nails are made. As the nails are stamped out, " the point of each nail extends " about half an inch beyond the centre and thinnest part of " the plate. " The point of the nail should be a little thicker " than the stem a little in rear of the point," and this is effected by the arrangement described.

The punches and dies used are of special construction. The " cutters or punches take in plan view the profile of the " nail, and they are firmly secured in any given number in " their proper position in the press by means of steel blocks " or sections, which embrace the cutters and are clamped " firmly thereto, grooves corresponding with the shape of the " cutters or punches being formed in the side of the steel " sections to receive the punches." This enables any of the punches to be removed for sharpening, &c. " The dies are " constructed in a similar manner, consisting merely of steel " sections with grooves so formed that when the sections are " secured together by means of bolts and screws, the spaces " or openings corresponding with the shape of the nails will " be left extending through from the top to the bottom of the " dies."

[*Printed*, 8*d*. *Drawing.*]

A.D. 1869, October 4.—No. 2870.

HODGE, PAUL RAPSEY, HENGST, CHARLES, and WILSON, NEWTON.—Welding iron and steel.

The inventors describe methods of welding iron and steel, available amongst other purposes for welding iron and steel together for making horse-shoes.

Two fluxes are described. No. 1 consists of 1 oz. calcined borax, and ¼ oz. essential oil of rosemary mixed with iron filings. No. 2 consists of a mixture of calcined borax only, with iron filings.

The mixture is sifted on the surfaces to be welded. These surfaces may be planed and then cut like a file. The welding is effected by hammering or pressure at a suitable heat.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1869, October 11.—No. 2952.

HUGGETT, John, and HUGGETT, John Albert.—Machinery for making nails.

The nails are specially horse-nails, though the apparatus may also be used for making other nails.

The rod from which the nails are made is rolled between a pair of rollers, one of which is formed so as to form bosses on the rod for the nail heads. It is guided to these rollers by a "funnel," and the axes of the rollers are supported by screws which are set up so as to cause "bosses" or flanges on the rollers to bear against each other. "To avoid friction and "needless wear" the operator "loosens the screw as soon as "the rod is rolled." The rod is then passed between guide plates to a second pair of rollers. The blanks are then cut up by shears while they are held by "a spring presser."

The blanks are then taken to the "heading" machine. They are placed by hand in dies mounted on a roller which bring them successively under a plunger carrying a "heading "punch." The dies are closed and held so by levers operated by the plunger. The nails are ejected from the dies by pushers operated by an eccentric on the roller spindle. The heads may also be formed by two separate machines, with dies formed respectively so as to partly form and to complete the head.

The nails are finished in a "pressing" machine. The blanks are laid by hand on "hard metal surfaces" mounted on a roller which carries them under a plunger carrying a die. As this die comes down on the nail, two lateral dies are also brought to bear on it. These are mounted in slides actuated by levers which are operated by friction rollers on the plunger.

[*Printed*, 2*s*. 4*d*. *Drawings*.]

A.D. 1869, October 15.—No. 3015.

GEDGE, William Edward.—(*A communication from Charles Jean Baptiste Peillard*.)—"Elastic horse-shoe."

The "branches" of the shoe "are divided at the toe by a "semi-straight and semicircular section, forming in the "middle a projecting part and a recess to receive it, the two "ends being in juxtaposition." The drawing shows a shoe in two separate parts divided at the toe. The two halves are not jointed, but a semicircular projection on one half fits into a corresponding recess on the other. "The toe part may be "steeled." The fitting parts may be formed by means of "a "chisel," shaped "according to the section above described" or by "a cutting punch having the exact shape of the above "described chisel."

[*Printed*, 8*d*. *Drawings*.]

A.D. 1869, October 15.—No. 3017.

MARSDEN, Henry Melton.—Sheep shears, &c.

A mass of iron with a layer of steel united thereto is rolled into sheets of suitable size for cutting out the blanks. The steel is so arranged that it comes in the parts which are to form the cutting edges, while "the iron part is suitably placed "for forming the shanks and bow, and the base or foundation "of the cutting parts;" or an ingot of mild steel, faced with hard steel, may be similarly treated, the hard steel then forming the cutting parts, and the mild steel the other parts. The bows, &c., if of iron or steel of too mild a temper, may be subjected to a process of cementation. The blanks are made up into shears in any usual manner. In hardening the shears the soft parts may be covered with some suitable substance, by which they are steelified.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1869, October 22.—No. 3076.

GRAYSON, John Robert.—Horse clipper.

The guiding handle is pivoted to the comb plate and can be clamped in various positions thereon. The teeth of the comb are parallel. The cutter is moveable, and is held by studs in a block which slides on the comb plate, its traverse being guided by studs on the comb plate which pass through slots in the cutter and the sliding block. A stud on this block fits into one of several holes in the end of the second handle, which also is pivoted on the comb plate. This allows of the handle being set at various angles, while it always gives the required reciprocating movement to the cutter. By means of set screws and a "friction plate" the pressure of the cutter on the comb is regulated. The cutter is formed "after the "manner of triangular cutters used in mowing or reaping "machines."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1869, October 28.—No. 3126.

MORE, John Walter, and NORMAN, John.—Horse clipper.

The comb plate is segmental shaped. To this plate an arm is pivoted. The cutter consists of a single tooth "mounted "loosely in the arm," and held down to its work by a spring on the arm. This spring is regulated by a screw. The cutter has its cutting edges "in a plane set off from that of "the stem" "whilst it is hollowed or channelled out" "between the cutting edges" "so as to facilitate sharpen-"ing and to enable the cutting edges to be kept in close "contact over their entire surface with the face of the comb." A "bridle or guide" keeps the arm and cutter down. The cutter arm is operated directly by a handle fixed thereto, or by a separate handle pivoted on the comb plate and having a slot in it engaging with a pin on the cutter arm.

The Provisional Specification refers to an arrangement in which the comb is straight, and a straight to-and-fro motion is imparted to the cutter, but this is disclaimed in the Final Specification.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1869, October 29.—No. 3138.

TAYLOR, Thomas, and DAVIES, James Wass.—" Apparatus " for singeing horses."

A pipe through which a flow of water is kept up, is arranged close to the gas jet pipe, so as to keep it cool and prevent it from scorching the hair and skin of the horse. In the arrangement shown in the drawing, two pipes, one for supplying water and the other for carrying it off, are led through the handle of the apparatus and are connected one with each end of a cross pipe fitted close alongside the usual gas pipe with a row of minute holes which forms the burners. Flexible pipes are fitted to the ends of the water tubes. A third tube fitted in the handle supplies the gas.

[*Printed, 8d. Drawing.*]

A.D. 1869, November 4.—No. 3199.

BUSK, Stephen. — (*A communication from Stanley Peter Youle.*)—" Bar iron for the manufacture of shoes for horses."

Bar iron is rolled to any suitable section for making horseshoes. In the section preferred, and shown by a woodcut in the body of the specification, there is on the upper side a " flange or projection formed on the outer edge of the bar, " and intended to form a wall around the hoof of the horse." On the under side are " grooves forming guide lines for the " nail holes," which are punched after the shoes are made.

[*Printed, 4d. No Drawings.*]

A.D. 1869, November 9.—No. 3221.

HEATH, Simeon.—(*Provisional protection only.*)—" Clipping horses."

" A circular ended court or plate being provided and " mounted upon a handle, a revolving cutting wheel with " eight or other suitable number of points is caused to work " in a circular direction upon the said comb or plate by " means of a handle of proper size and construction, with " which it is fitted."

[*Printed, 4d. No Drawings.*]

A.D. 1869, November 13.—No. 3278.

BURGON, Charles, and BALL, James.—(*Provisional protection only.*)—Sheep shears.

The shears are made from steel and iron plates welded or rolled together and cut into shape. "The shear is made in "one piece only, or it may be made in two portions or parts "if desired, and the portions or parts rivetted or otherwise "fastened or secured together." "A suitable metallic or "other spring may be attached if required to assist the open"ing and closing action of the shear."

[*Printed, 4d. No Drawings.*]

A.D. 1869, November 15.—No. 3296.

BONNEVILLE, Henri Adrien.—(*A communication from Charles Courtois.*)—Horse clipper.

The apparatus is composed of two circular plates pivoted together. The lower plate has a handle by which it is held, and the upper one receives a rotary motion by means of multiplying gear. The lower plate has teeth on part only of its circumference, and these teeth are "straight or parallel "with one another, that is to say, not cut in the direction of "the radii." The upper plate has teeth all round its circumference, and these "are cut in the direction of the radii." The plates are pressed together by a helical spring surrounding the pivot which connects them. The upper plate "is "slightly concave, so that its teeth only bear on the lower "plate." The space between the two plates serves as an oil reservoir.

[*Printed, 8d. Drawing.*]

A.D. 1869, November 20.—No. 3356.

SALOM, Salom Henry.—(*Provisional protection only.*)—Horse clipper.

The cutters are detachable and are mounted upon the cutter plates, &c. "in such a way that the pressure on the actual "cutter through the lever shall always keep the cutting "edge of the cutter in contact with the surface of the comb "plate." The cutter is "preferably a segment of a hollow

" sphere." "The truncated portion or sharp edge of this
" cutter plays on the upper surface of the comb plate. To
" the polar extremity of this hollow spherical segmental
" cutter is attached by a pin the cutter plate, cutter lever, or
" cutter shank, in such a way that the hollow spherical
" segmental cutter shall have a slight play on the pin upon
" which it is mounted."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1869, December 1.—No. 3476.

HENDERSON, Arthur Charles.—(*A communication from Thomas Pilter.*) — " Apparatus for shearing or clipping animals."

The apparatus is intended for clipping horses, as well as for shearing, &c.

It is mounted on a standard fixed to the ground and is driven by hand or other power while the cutter is moved over the skin of the horse.

A standard is pivoted on a base fixed to the ground, its motion being regulated by a screw in the base bearing against the standard. At the top of this lever a balanced arm is mounted so as to pivot in a vertical plane. On the axis carrying this arm is also a fly-wheel round which a band passes giving motion to a pulley mounted at the end of the balanced arm. This pulley by level gearing imparts motion to a shaft hung to the end of the arm, the axis from which it is suspended being coincident with the centre of motion of one of the gear wheels. This shaft has a sleeve surrounding its lower end, terminating in a box to which another sleeve is jointed. At the bottom of the second sleeve is a second box in which is mounted a shaft carrying a double-bladed cutter. Motion is communicated to this cutter through a train of bevel wheels and shafts so arranged that the sleeve can be carried into any position without interfering with the transmission of motion. The rotating cutter acts against a circular serrated fixed cutter, and is pressed up into contact thereto by a spring on its shaft which is square where it carries the cutter, so that the cutter can slide thereon. To prevent noise, friction gear may be employed, or any other suitable noiseless gear.

Instead of being driven by hand, the apparatus may be worked by any suitable motive power, and a number of the machines may be arranged so as to be driven by bands from pulleys on a single main shaft.

[*Printed,* 1*s.* 4*d.* *Drawings.*]

A.D. 1869, December 6.—No. 3523.

SHANKS, William.—Machinery for forging horse-shoes.

The rod to be formed into shoes is fed in between guides in a fixed holder, and under a shearing lever, which cuts off a length required. The piece cut off is pushed up against a stop beside a mandrel, and itself forms a stop to regulate the length of the piece cut. The shearing lever "is worked by a "revolving cam, and in descending shears or detaches from the "part of the rod in the stationary holder the remainder of the "rod, the severed end of which last it retains, and on again "rising brings opposite to the holder guide for the next length "to be pushed in." The length to be shaped is held against the mandrel by a block kept up against it by a lever and spring, and withdrawn by a cam. "This same lever is by "its spring made to finally discharge the shoe, which it is "allowed to do at the proper time in consequence of the core "being then withdrawn downwards by a cam actuated by a "lever. The ends of the rod length or blank are bended "round the core by means of a slide moving horizontally "backwards and forwards in guides upon the table top. To "the front of this slide two arms are jointed with rollers on "their front ends to bear on the blank, and with pins on their "under sides to work in guide grooves shaped to suit the "intended form of shoe. Fixed guides are also provided for "the outsides of the rollers to bear against when acting on "the horns of the shoe, in order to reduce and taper the "metal near the ends." Or the ends may be shaped by blocks or dies "centered on pins, and made to close round, "the blank by rods connecting them to the horizontal slide." After the bending a die is brought down on the shoe to complete it. The table under the blank, or a moveable piece set therein, may be shaped so as to give "a bevilled or other form "to the under side of the shoe." "The upper die is carried "by a slide working in vertical guides, and may be actuated "by a steam hammer or by a lever worked by a cam," &c. "The horizontal slide is worked by a cam or wiper, on what "may be termed the main shaft of the machine," and this receives its motion directly from a steam engine or by bands and pulleys in the usual manner. The rod to be operated upon may be first rolled to the shape required, "just "before entering the machine."

[*Printed*, 1*s*. 4*d*. *Drawings*.]

A.D. 1869, December 8.—No. 3544.

ROBERTSON, JOHN STEWART.—"Horse-shoes for frosty or "snowy weather."

The invention consists in using an "overshoe" which can be fitted upon the ordinary shoe. Several modifications of the shoe are described.

1. A plate, with sharp points at the toe and heel, fits over the under surface of the foot. A tongue in front clips over the inner edge of the shoe, and a strap passing round over the foot holds up the heels. The plate serves to prevent snow balling in the foot, but if preferred the middle part of the plate may be cut out.

2. The heel parts are held by a pair of "latches" turned by a key so as to hold upon the inner edge of the ordinary shoe. Steady pins on the overshoe may fit in holes in the ordinary shoe.

3. A crossbar which clips against the heel parts of the ordinary shoe is screwed back by a screw mounted on the plate, and as the front part of the plate is by the same action forced forward, the plate is thus jammed in the shoe.

4. Instead of a plate a "narrow strip" of iron is used. This carries the toe point, while the heel point is carried by a cross piece which holds against the heels of the ordinary shoe. The two pieces are united by a screw.

5. The same as (4) except that the central strip has a screw thread cut on it at the back, and a nut thereon binds against the cross piece, through a hole in which the screw passes.

The points may be of steel and may fit into coned holes in the overshoe. A ply of rubber, cloth, &c. may be interposed between the two shoes.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1869, December 21.—No. 3692.

MARSDEN, Henry Melton.—Sheep shears, &c.

The shears are made out of iron and steel sheets. "The steel " for the cutting part to be about seven inches wide, and to " run down like a thin veneering on both edges of the same " side of the sheet, or to cover entirely one side of the " sheet, or to form the two opposite edges of the " sheets altogether." Or the sheets may be made of hard and mild steel, in the same relative positions. The shears may also be made of one quality steel, "but of unequal " thickness, such irregularity being intended to dispense with " the necessity of cogging or goffing the bows, as is now the " case in the manufacture of cast steel sheep shears out of " cast steel sheets of uniform thickness." The sheets "being " rolled thin in the parts intended for the bows of the shears " " will require cutting up crosswise instead of lengthwise." The inventor says:—"Having got the sheets suitably rolled " as to gauge and width I pare or punch them to the required " form by hand or power. I proceed to turn up the back if " required, then hollow the shank and curve the blade, after " which the bow must be bent to the required form or curve."

As improved arrangement of moulds for casting lumps of iron and steel for such purposes as the above is also described.

[*Printed*, 8*d*. *Drawing*.]

1870.

A.D. 1870, January 3.—No. 18.

COCKBURN, William, the elder. — (*Provisional protection only*.)—Horse-shoes.

The shoes are made " in such manner that a minimum sur" face of metal is presented to or comes in contact with the " ground."

1. "A shoe with a deep rim or flange or projection having " a sharp or narrow edge."

2. "A shoe, the ground surface of which is serrated or "notched."

3. Appliances for roughing. "Sharp or narrow edged bars "or blades fit by dovetail fitting or the like in a frame" which "is placed on the shoe or hoof, and buckled, strapped, "or otherwise fastened in places."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1870, January 4.—No. 30.

COTTAM, EDWARD.—"Machinery for rolling bars for the "manufacture of shoes for horses."

"The machinery consists of a pair of rolls fixed on shafts "and mounted in suitable frames." The action of the rolls is "intermittent, that is to say, that they act upon the bar during only a portion of their revolution." "The faces or the "peripheries of the rolls are curved, moulded, or otherwise "made with the form of die required according to the "irregularities of the bars to be rolled, but on one of the "rolls, say the upper, the die only extends about one-third "to one-half round the face of the roll, viz., for a distance "equal to the length of one bar to be rolled, so that during "the remaining half to two-thirds of the revolutions of the "roll, the said roll does not act. The other or lower "roll may be formed with the die for the whole of its "periphery if desired, or only for an extent equal to that of "the die on the upper roll." Two "flat or convex rings" are mounted "loosely on the shaft of one of the rolls (say the "lower), one ring being on each side of the roll; these rings "have their peripheries slightly conical or bevilled, and they "are pressed against the work at the time of rolling by "means of adjustable friction rollers at their back, or by "adjustable flanges on the sides of the other roll, and they "have sufficient play to allow of the escape of the bar after "it has passed through the rolls and proceeded beyond the "point of pressure caused by the friction rollers. The iron "or metal to be rolled is first brought to the proper length "and approximate form; it is then heated, and by a feeder, "worked by a tappet or otherwise, is introduced between the "rolls; it passes between the dies, and is delivered at the

" back as soon as the side rings are released from the pressure " of the friction rollers."

[*Printed*, 8*d*. *Drawing.*]

A.D. 1870, February 10.—No. 394.

WILSON, JOHN CHARLES. — " Machinery for shearing and " washing sheep or other animals."

The portion of the invention relating to sheep-washing does not concern the present series. The moving cutter plate of the shearing apparatus "derives its motion from a small " revolving or rotary engine affixed to the stationary plate." " This small engine is worked by means of air or other fluid " obtained either directly from a large engine," or by water supplied under pressure. The exhaust discharge "towards or " in the direction of the cutting teeth of the apparatus so as " to clear away from them the wool or hair which is being " cut, or a separate fan may be used." The " compressing or " motor engine " is by preference of the form described in No. 3499, A.D. 1869. " The said engine may be worked either " by hand, steam, or any other power."

[*Printed*, 6*d*. *Drawing.*]

A.D. 1870, February 14.—No. 427.

FLEAR, JOHN.—Horse clipper.

"The improved apparatus consists principally of two steel " or other suitable metal combs, each of a semicircular shape " round the outside edge." These are pivoted together at the axis of the semicircle, and operated in the usual manner of shears by a pair of handles. " The combs are hollowed out " or shaped in such a manner that contact exists between them " only at the heel and at the cutting points or blades." " The " teeth or cutting blades of the two combs are cut in different " directions, that is, the teeth of the bottom comb are cut " from the under side, and the teeth of the top comb from the " upper side, the cutting part of the blades lying perfectly " level on each other."

[*Printed*, 6*d*. *Drawing.*]

A.D. 1870, February 16.—No. 458.

TWIGG, George.—"Shearing and clipping apparatus."

Several varieties are described:—

1. A plate to which a comb or lower cutter is bolted has a handle affixed thereto. The other handle is pivoted to the same plate and is also connected by a stud or slot to the upper cutter, which is formed with comb teeth resembling the lower cutter. By means of a groove on one plate and a projection or "set-up" upon the other, the upper plate is caused to work in a parallel direction over the lower one.

2. The handles "work freely upon a centre" "with a "scissors joint and action," and the ends of the handles are fitted to two shearing plates, as in (1.). The plates are secured together by screw pins passing through slots therein; or "by "means of a T piece" "fitted within suitably formed "grooves in the shearing plates, the securing of the parts "being effected by means of screws."

3. The two handles are pivoted together at their ends, and the cutting plates are pivoted thereto at a short distance from these ends, the parellelism of the plates being secured by an arrangement like that in (1.).

4. The handles are connected by a "knuckle joint," and the ends of the handles are connected, one to each plate. The plates are caused to move parallel to one another by means of slots and screws.

In (3) and (4) one handle may be fixed to one of the plates, and the other only be connected to its plate by a pivot.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1870, February 21.—No. 508.

SMITH, Thomas James.—(*A communication from Auguste Lengelée, Leon Bouttier and Charles Vincent.*)—Horse clipper.

A segmental comb plate with a handle fixed thereto has pivoted to it a forked handle, to the end of each fork of which is fitted a moveable cutter. This cutter, as figured in the drawing, appears to be formed as a segment of a hollow cone, the flat edges of which act against the teeth of the comb. The pressure of these on the comb is regulated by screws.

The play of the moving handle is limited by stops on the comb plate.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1870, February 23.—No. 533.

CLARK, Alexander Melville.—(*A communication from Daniel Dodge.*)—Machinery for making horse-shoe nails.

An anvil is mounted on the framing, and by it is fitted " a " steel die whose face forms a right angle with the face of the " anvil." The main shaft is set horizontally over the anvil, and " has opposite to the anvil a short arm carrying at its " extremity a cylindrical roller whose face is of nearly the " same width as the anvil, the axis of the said roller being " parallel with the axis of the main shaft." A hammer operated by an eccentric on the main shaft acts on the anvil. The hammer " consists of a cast block arranged to swing " between two centre points whose counter axis is parallel " and almost in the same vertical plane with the face of the " die." " The operating face of the hammer is on a steel die " which is nearly a counterpart of the fixed die." The rod of iron which is to be worked up into the nails passes through a guide so operated by a cam and spring, as to carry the rod to the die as the hammer " approaches the fixed die " and to the anvil " when the hammer moves back again." The nail rod is held by a spring " gripper " mounted on a slide. A reciprocating motion given to the " gripper " causes it to carry the rod over cutters which sever the nail, and also cut the points across diagonally. The cam which gives this motion is shaped so as to produce a slight retrograde moment of the gripper from the dies " just at the movement when the stroke " of the hammer is given. By this movement the bending " of the nail rod which would otherwise be produced by the " elongation of the metal is prevented." A sliding gauge travels to and fro to regulate the length of the nail and hold it while it is being cut off. A sliding finger also holds the point of the nail while it is being cut.

[*Printed*, 1*s*. *Drawing*.]

A.D. 1870, March 8.—No. 684.

WILLIAMS, Charles Henry.—" Curing skin diseases in " animals."

The composition which is to be employed for this purpose consists of " petroleum or other similar hydrocarbons 3 quarts, " oil of tar one quart, bole half a pound." It is rubbed into the skin of the infected animals with the hand.

[*Printed, 4d. No Drawings.*]

A.D. 1870, March 12.—No. 738.

NICHOLSON, William, and HOPKIN, Daniel.—" Clog for " roughing horses."

The " clog is constructed of two pieces of sheet steel cut on " their outer edge to the contour of the horse shoe, the two " pieces forming when together an ellipse." " On the inner " side of each of these half elliptical pieces is cut a slot " inclining inwards towards the front of the shoe; and at the " front and back of each piece a place is formed by stamping " for receiving a peg or spike; these four pegs or spikes, " which are for obtaining a hold for the horses' feet on icy or " slippery ground, have their shanks at right angles, and " slotted for the purpose of fixing them securely. A projec- " tion is left at the front and back of each semi-elliptical " piece which is turned up and inclined inwards, thus form- " ing four clips."

" The two front clips are the longest and serve to clip the " front of the horse's hoof, and the other two serve to clip " the sides of the shoe at the back. The two parts of the clog " are jointed together at the front," by means of a small plate, to which each of the plates are hinged " so that they " may be moved towards or from each other. The two parts " are also connected together at the back by a small cross bar " with a pin at each end working in the herein-before de- " scribed inclined slots. This cross bar has a tapped hole in " the centre for receiving a screw by which the clog is securely " tightened on to the shoe, the cross bar also having at each " end a small catch for taking on to the inside face of the " shoe." Instead of the two front clips, a single clip may be used; this is formed on the small connecting plate which is made larger for the purpose. The spikes can be renewed as they wear out.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1870, March 16.—No. 780.

WALKER, James Townsend.—" Making horse-shoes."

A machine for the purpose is described. Mounted in suitable standards over the bed of the machine is a horizontal shaft on which is a cam operating a plunger to the lower end of which the top die is secured. The cam works against a roller on the top of the plunger, and " this roller is placed slightly back of " the centre of the shaft." to ensure the pressure of the die being vertically downwards. On the shaft, on each side of the cam, is a disc grooved on its periphery. Pins on arms carried by a pair of vertical rods engage in these grooves, and the rods have feet on their lower ends which by the action of the grooved discs hold and release the blank. A parallel shaft to the first-named shaft has on it a cam which operates a horizontal plunger. Grooved discs thereon also operate a pair of levers. The blank being placed in the machine is cut off by a cutter operated from the upper shaft. It is held by catches on the levers above mentioned, while the horizontal plunger forms it into shape. The lever arms are also caused to compress the heels of the shoe round the end of the plunger, which is of a suitable shape. The feet on the vertical rods then carry the blank down on the lower die, and the vertical plunger brings the upper die down upon it. To prevent the shoe being carried up by the upper die as it rises, the end of a lever is brought down on it, and is held by a cam on the lower shaft until the upper die is lifted. The upper die is inclined so that the shoe may be thinner at the toe than at the heel. The lower die is caused by any suitable mechanism to open to discharge the shoe. " Along the sides of the bottom die" " are bevelled grooves," and " when the creasers" "in the " top die strike the blank they force the iron into this bevel, " forming the incline or bevel on the outside of the shoe." To prevent the " tendency to draw the heels of the blank " inward," the " frog of the upper die" has a projection thereon which fits between the ends of the blank.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1870, March 21.—No. 831.

WALKER, Parlane McFarlane. — (*Provisional protection only.*)—" Shoeing horses."

1. An artificial frog is applied to the foot. This is preferably of vulcanised rubber, fitting accurately to the natural frog, and " having a triangular ridged or raised gusset piece " projecting up into the 'cleft' of the frog at the extreme " back of the heel." " This 'frog' is made to project a little " beyond the 'tread' or bearing surface of the iron shoe." The "tread" surface of the artificial frog may be ridged or indented. The frog is secured to the foot by having attached thereto or made therewith a piece of fabric which is placed between the hoof and the shoe and nailed through. Or it may be secured by "springs, straps or bars" which "form " 'clutches' to the shoe, so as to hold the artificial 'frog' in " position."

2. A "toe 'tread' piece" of elastic material is fitted in a recess in the metal shoe, " either by forming the shoe in two " pieces or half side shoes with a space between them, or by " bending the toe of the shoe back towards the frog over the " middle of the sole, but not so as to rest on this part." The toe-piece may be attached to the fabric carrying the artificial frog, or it may be riveted or screwed to the shoe, " a thin part of which may be left between it and the hoof."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1870, April 2.—No. 973.

NEWTON, William Edward.—(*A communication from Sebastien Schlesinger.*)—" Machinery for making horse-shoe and " other nails."

" The operating instruments or tools to form the nail con" sist of an upper and lower hammer, which work up and " down in combination with a pair of side hammers or " squeezers, which are mounted on vertical shafts or spindles, " and operate in combination (but alternately) with the top " and bottom hammers." The operating faces of all the hammers are so shaped as to produce the proper form of the nail. The hammers are mounted on levers operated either direct, or through the intervention of rock shafts, bands, &c.

from a main shaft driven from any suitable prime mover. The nail rod is fed in through a tube mounted on a frame so that it can be turned aside to bring the rod "between a pair "of cutting jaws formed by one cutting edge on the fixed "part of the framing and another on the lever which carries "the lower hammer." The nail as it is cut off falls down a shoot to a receptacle below.

[*Printed*, 10*d*. *Drawing.*]

A.D. 1870, April 26.—No. 1203.

FLETCHER, Horatio.—Manufacture of horse-shoes, &c.

A main shaft mounted on standards set upon a suitable bed plate carries "a central cam for giving a downward stroke "to a vertical rod carrying a punch or die holder with "piercing pegs adjusted therein." Cams on the same shaft also impart "a downward action to a pair of rods suitably "guided and having their lower ends secured to a holding "and partially forming foot plate, which is made to fit the outside edge of the tip or blank under operation." There are also cranks or eccentrics on the shaft, which lift "the side rods and the punch or die shaft after "the completion of a stroke." "Upon the bed of the "machine is fitted in position for the action of the punch or "die shaft a raised bed or counterpart perforated with a series "of holes corresponding to the piercing pegs or tools in the "punch or die holder, and upon the raised bed is formed a "shape or block piece around which the blank is held; a "vertical shaft passes and works through an angular hole in "the bed, and is connected to the punch or die holder for the "purpose of ensuring a certain and steady action."

When a blank is placed in position the "foot plate" is first brought down upon it and shapes it; next the "punch or die "shaft" descends "until the piercing pegs or punches come "into contact with and perforate the blank." These are withdrawn while the blank is held by the "foot plate."

In a second machine described a "male or female die" or a "series of counterpart dies or matrices upon a solid bed or "plate" are used, "such dies being interlaced in any suitable "manner to avoid waste of space and material." A heated blank is placed between the pair of dies which are held in corresponding position by pegs, &c., and the whole is passed between rollers or placed in a hydraulic press.

[*Printed*, 1*s*. 4*d*. *Drawings*.]

A.D. 1870, May 2.—No. 1247.

KIDD, JOHN HOWARD.—(*Provisional protection only.*)—Horse-shoes.

The shoe is nailed on to the hoof in the ordinary manner, or a plate " may be secured to the hoof like an ordinary shoe, " and then the actual shoe may be secured to the plate by " screws or rivets." To the shoe is fitted "a sole of vul- " canized india-rubber, which is made to adhere to the metal " in the process of vulcanising; that part of the sole in " immediate contact with the metal is hard, and the other " part of the sole vulcanized india-rubber."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1870, May 12.—No. 1359.

CAMPBELL, ALEXANDER.—(*Provisional protection only.*)—"Dip " or smear for destroying vermin or disease in sheep or other " animals."

The following are the ingredients and the proportions preferred :—" Hellebore 30 to 40 parts by weight ; oil or grease " 30 to 40 parts by weight ; spirits of tar and paraffin oil, 10 " parts by weight; sulphur 15 to 20 parts by weight; soft " soap and glycerine, 30 to 40 parts by weight; potash or " other alkali, 8 to 12 parts by weight." A little arsenic may be added.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1870, May 27.—No. 1553.

GEDGE, WILLIAM EDWARD.—(*A communication from Pierre Michel Sibut, senior.*)—(*Provisional protection only.*)—" Grooves " for rolling and shaping iron," &c.

The apparatus may be used for rolling bars for making horse-shoes, &c. The grooves in the rollers are "composed " of two parts, the one in projection on one of the two rolls, " and the other sunk in the second." In the grooves "the " edges being of a conical section or of a section derived from

" the conical, neither the one or the other parts present plane " surfaces in contact, but only curved surfaces, from whence " it results that the projecting part being wedged or other- " wise tightened on the hollow or recessed part is in adhesion " therewith only by points of their circumference. The " general shape of these grooves is conical without lateral " parallel bases." " To prevent any shaking of the rolls a " certain number of ordinary grooves may be formed on " them, such grooves however not to be used for rolling." " The grooves may be fixed and formed on the rolls them- " selves, or they may be made in one or several moveable " parts brought together and bolted upon axles."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1870, June 2.—No. 1596.

HOLDER, Thomas.—(*Provisional protection only.*)—" Elastic " sandcrack boot or hoof covering."

The boot " is made by taking a sheet of india-rubber pro- " perly vulcanized or treated, and then cutting out from such " sheet, on the cross way of the stuff, a band of such shape " as to fit well over the hoof, being broad in front and narrow " at the back, the narrow ends being joined and cemented to- " gether, so that an endless band is thereby formed, which can " be fitted over the hoof so as to completely protect the same."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1870, June 7.—No. 1642.

HOLT, Barnard. — (*Provisional protection only.*) — Horse-shoes, &c.

The shoe is made with " a channel or trough passing around " it on its under side." This may be effected by forging the shoe from bars of trough iron, or by making it of malleable cast metal. The shoes are nailed on by nails passing " through " the bottom of the trough," and after they have been fixed, there is inserted " into the trough on the under side of the " shoe a strip of vulcanized india-rubber which is of a depth " sufficient to project to any desired extent from the under " side of the shoe." The strip " has canvas combined with

" it." It is secured by pins passing through it and through the sides of the "trough."

The invention also applies to fitting elastic tyres to wheels.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1870, June 28.—No. 1836.

CARR, CHARLES JOHN.—Horse-shoes.

1. Fastening the shoe on the hoof without nails. On the outer edge of the shoe are formed or fixed small metal straps with short spikes upon them "of such length as not to pierce " through the horn of the hoof." "The hoof is first properly " fitted to the shoe and the foot placed thereon, after which " the straps are turned over and hammered on to the outside " of the hoof so that the spikes pierce the same." Or there may be "taper dovetailed slots in the outer edge of the shoe," and in these are placed "thin straps, each having one or more " spikes, there being on the strap a taper dovetailed part " corresponding with the slot in the outer edge of the shoe." The straps are of various shapes, and may be cast on or fitted to "a rim projecting a short distance up the hoof."

2. The upper surface of the shoe is formed with "a bevil " inclining upwards towards the sole of the foot" to prevent any "tendency of the shoe to slide on the foot." This modification may be employed with the fasteners above described or the ordinary nails.

3. A "perforated shield or cover" is fitted "over the surface of the sole of the foot." "The shield covers the foot " with the exception of the frog, and at that part the metal " is flanged downwards, being level with the bottom of the " shoe, where it joins the rim, but receding slightly upwards " as it advances towards the centre." Pads of felt, india-rubber, leather, &c. may be fitted to the "shield," and secured thereon by spikes, "adhesive mixtures," stitching, &c. Spikes to prevent slipping in frosty weather may be screwed or otherwise fitted into holes made for the purpose in the heels and toe of the shoe.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1870, October 4.—No. 2632.

OVERMAN, Thomas William.—(*Provisional protection only.*) —" Apparatus for administering medicine to horses and other " animals."

"The medicine ball is placed in a tube or barrel, within " which is a piston pressed forwards by a spring. The rear " end of the barrel in which the medicine is placed is carried " on the end of a tubular stem, the piston rod of the piston " passes back through this stem, and at its rear end is formed " with a handle or attachment by which it can be drawn " back. The tubular stem at its rear end is attached to a " stock or handle on which is a trigger catch, by means of " which the piston rod can be retained after it has been " drawn back. When the piston has been drawn back and " whilst it is retained by the trigger catch, the ball is placed " into the barrel. When the apparatus has been inserted " into the animal's mouth the trigger is pulled and the " medicine ball is thrown forward from the gun into the " animal's gullet."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1870, October 25.—No. 2805.

HUNT, Bristow.—(*A communication from Ebenezer Cate.*)—Horse-shoes.

1. The shoes are made of angle iron or steel. The wearing surface is "flat or plain at the heel and toe" with "grooves " formed between these parts at the parts where the shoe is " the least exposed to abrasion." The object of this is to cause the shoe to wear down equally.

2. The shoe has "a thin plate" "for its upper portion, on " which the hoof rests, and a thicker part" "for the wearing " portion, the bottom of which latter part constitutes a continuous 'calk' or calkin, and which is provided with a " continuous groove" "in which are the nail holes."

3. The bars from which the shoes are made are of angle iron, grooved as required, "the same constituting a connected " series of blanks suitable for making horse-shoes."

[*Printed*, 8*d*. *Drawing.*]

A.D. 1870, October 26.—No. 2817.

ADAMS, Robert, and GREENWOOD, George Henry.—(*Partly a communication from the late Robert Adams.*)—Horseshoes.

The shoes are made with "a continuous ridge underneath " the outer edge or crust of the hoof." This ridge is "curved, " tapered, or otherwise reduced in sectional form down to the " inner edge of the shoe, except at the front and back ends, " or at intervals around the shoe where enlarged wearing " surfaces are formed." Perforated recesses are formed in or " at the back of the ridge through which the nails are driven, " the recesses being so formed as to admit of the nail being " driven in the direction desired, and also serving to protect " the heads of the nails from contact with the ground until " the ridge or wearing surface of the shoe is considerably " worn down." The ridge "does not extend to the extreme " back ends, but curves and tapers off to the surfaces upon " which the hoof rests." The shoes may be made from steel or iron bars rolled to a suitable section, and then stamped and bent by suitable machinery of any usual character.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1870, November 3.—No. 2899.

NEWTON, William Edward.—(*A communication from Lawrence Barnes.*)—" Machinery for pointing nails."

The nails are horse-shoe nails. The blanks are fed to the pointing mechanism by a screwed shaft alongside of which is a fixed shaft. The blanks are held between the screw threads and the fixed shaft and are carried along by the revolution of the screw until they are brought over the required spot, where an enlargement of the helical groove permits them to fall one at a time into the pointing mechanism. This consists of a circular rotating frame mounted on a suitable fixed frame. At the centre of the circular frame is a gauge, upon which the blank falls and by which it is supported until it is seized and held by a catch operated by a spring and a cam. The gauge is then withdrawn by a cam, and the nail held by a catch, is acted upon by a set of hammers. "Four or more hammers " are used, and are attached to arms that project from a rock

" shaft hung in the lower part of the frame. The hammers " all radiate from the centre of the rotary frame and are " thrown together by V shaped arms which project from the " inner circumference of the rotating frame and drop apart " by their own weight." The catch allows the finished nail to drop, and receives another from the feeder above.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1870, November 17.—No. 3018.

HASELTINE, George.—(*A communication from Henry Mulholland.*)—" Steel horse-shoe nails."

Instead of the usual iron, steel is used. This is rolled into strips which are passed through a punching machine. The machine is described. It consists of a frame, in which a " gate," actuated by an eccentric and connecting rod, slides vertically. In the lower part of the " gate " are either two punches or a single punch, secured in place by keys. Below this is a cast-iron bed carrying dies, on which the punches act. The cut nails pass through an opening in this bed. The rolling machine is also described. A pair of rollers are mounted in a suitable frame. The " lower roll is divided into " a convenient number of recesses or grooves with a configuration similar to the section of the plates to be rolled. " The upper roll is also divided into projections and recesses, " the sectional area between the rolls is of such form that the " two opposite edges are of suitable shape and thickness to " form the heads of the horse-shoe nails when the same are " punched out with the plate, gradually diminishing in thickness towards the centre." The recesses between the rollers are graduated so that the strip may be passed through them in succession and thus be reduced to the thickness and shape required.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1870, December 6.—No. 3199.

BELL, Andrew.—(*Provisional protection only.*)—Horse-shoes.

The shoes are made with separate adjustable heel and toe pieces. The heel pieces are of hardened steel, " each having " a long broad thin flat part projecting forward and bedded

" firmly on the face and heel of each limb of the shoe, with a " flange and edge or rim projecting up and round the inner " curved edge or side thereof as a groove for holding on to " the shoe." A screwed spindle fitting across the shoe turns freely in a boss on one of the heel pieces, and screws into a similar boss on the other. By this action the two pieces are held in their places. Or the spindle may be screwed with a right and left handed screw, and then screwed into both the bosses. Jam nuts may be employed to secure the spindle in its place. To hold the toe piece, a tapered slot is formed in the toe of the shoe, and a sharp toe piece of hardened steel is to be driven into the slot "when the shoe is hot or cold, " so that these sharpened toe pieces when inserted may be " 'calked' or 'set up' along the two edges of the groove so " as firmly to secure them therein yet still allow of their " being removed or driven out laterally when they get worn " or require sharpening."

These shoes are available for use in frosty weather.

[*Printed, 4d. No Drawings.*]

A.D. 1870, December 7.—No. 3217.

HOWARD, Frederick Joseph.—Horse-shoes.

The shoe is formed in the usual manner, and while it is hot, "a series of flat notches or indentations are struck or " hammered on the face of the shoe, being afterwards filed " and finished." A curved indentation " is also made in the " front part of the shoe." The shoes are intended to dispense with the necessity for roughing.

[*Printed, 8d. Drawings.*]

A.D. 1870, December 12.—No. 3248.

HARRIS, Josiah.—(*Provisional protection only.*)—Horse-shoes.

The shoes are made of gutta-percha, india-rubber, &c. The material is run into moulds, or otherwise shaped, and afterwards hardened in any suitable manner.

[*Printed, 4d. No Drawings.*]

A.D. 1870, December 15.—No. 3283.

BRICE, Alexander Charles, and SCANTLEBURY, William. —Knife for mowing, shearing, &c.

The Specification describes a mowing machine, and a knife for shearing skins, but no apparatus applicable for purposes connected with the present series. The "cutting side or "surface" of the knife "is formed with **V** or angular "recesses." The points thus formed are by preference bent, the "ends being slightly curved upwards." The knife is "used in a direct line against the material to be cut without "any cross cut or reciprocating motion."

[*Printed*, 8*d*. *Drawing*.]

1871.

A.D. 1871, January 10.—No. 52.

ELLIS, George Henry, and GILBERT, George.—(*Provisional protection only.*)—Roughing horse-shoes.

A metal plate "having at one end a lip turned down" and at the other end "projecting portions or bands which are "bent round so as to form a spring or other clip intended to "embrace or fasten on the shoe." The "tip may be sharpened or its edge may be jagged or made into teeth." "The "clip or bent portion of the plate is intended to be driven "and made fast upon the inner edge of the shoe at the toe." The inner surface of the clip is roughened.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1871, January 12.—No. 77.

ROWATT, Thomas. — (*Provisional protection only.*) — Roughing horse-shoes.

"Pieces of steel" with "tapered projecting points" are fitted to the shoe. "In the shoe there are vertical slots or "holes for the entrance of the pointed pieces of metal and "horizontal holes for the wedges," which "are driven through "the horizontal holes in the shoe and the edges in the projecting pieces and their ends bent over." "The front of the "shoe for the fore foot must project sufficiently to allow "the pieces of metal to pass through and be fastened by the

" wedges." " A small groove or recess may be made in the " upper part of the shoe to allow the wedges to be sunk " nearly flush with the shoe."

[*Printed, 4d. No Drawings.*]

A.D. 1871, January 13.—No. 93.

PRINGLE, Hall. — (*Provisional protection only.*) — Horseshoes.

The shoe is jointed. In the drawing two shoes are shown, one with a single joint, and one with two joints. The shoe is made in two or three portions, the end of one portion being formed with a conical piece thereon, which fits in a corresponding recess in the other portion.

[*Printed, 6d. Drawing.*]

A.D. 1871, January 14.—No. 98.

CROSSMAN, Craufurd, and FERGUSON, Joseph Henry. —(*Provisional protection only.*)--Securing horse-shoes.

The shoes "are to be attached to the feet of horses" by means of "straps, metal rings, and buckles."

[*Printed, 4d. No Drawings.*]

A.D. 1871, January 19.—No. 138.

REID, Gilbert Aitkin.—Dip for sheep.

"A mixture of equal parts of staveacre seeds (delphinium " staphisagria) tobacco, hemlock and hellebore, all in fine " powder or as an infusion or infusions" is mixed with "solu- " tions of one part of bluestone (copper sulphate) two parts " arsenic, one part sulphur, and four parts soda ash." To this is added "two parts of alum in solution, and finally a mixture " of twenty parts of any one or more of the following oils, " namely, castor, gallipoli, lard, tallow, whale, seal or fish " oil, with three parts each rough turpentine and soft soap, " or with six parts of either of the two last-named sub- " stances."

[*Printed, 4d. No Drawings.*]

A.D. 1871, January 21.—No. 161.

COLLS, Henry, jun.—Horse-shoes.

A "sole-plate" is employed, similar in form to the ordinary horse-shoe, except that instead of "being all in one piece it is " divided, and is provided with screw holes or other means of " securing thereto the other parts which form the attachment " arrangement for securing the shoe." "Above this horse- " shoe or sole plate a rising or fronted plate or boot, similarly " divided and having a lateral part or attached lateral plate " which fits on top of the horse-shoe or sole plate and can be " secured thereto" by screws or otherwise. The "frontal " plate or boot at the front is provided with screw socket " pieces into which a screw is inserted and secured by screw " nut at the end thereof, so as to firmly attach the parts of " the frontal or rising plate and its lateral part or plate " together." "The heel bar which secures the heel of the " sole plate together is secured thereto by screws or rivets at " each end, on which the heel bar is free to move."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1871, April 22.—No. 1060.

WARD, David.—(*A communication from Charles Sargeant.*)—(*Provisional protection only.*)—Sheep shears.

1. "So making the handles and the bow that faulty or " worn-out blades can be removed for grinding," &c.

2. "Enabling the cutting edges or the points to be reset as " they become worn.".

3. "Making the rib of the blade or blades to start at a " distance from the point or points to enable the shearer " to keep close to the skin of the animal."

The blades are of steel or steel and iron. They are made with a rib "which runs out from the back edge at a distance " from the points." The handles are iron "of a curved form " for lightness, and with their ends bent at right angles so " that the spring bow can be attached by screws," &c. " The holes through which the screws pass are preferably " slotted to allow of the cutting edges of the blades being set " nearer to or farther from each other as circumstances may " dictate."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1871, April 25.—No. 1095.

WISE, William Lloyd.—(*A communication from Gustav Adolph Kästner.*)—(*Provisional protection only.*)—Horse-shoes and machinery for making the same.

Bar iron is rolled to the proper section, cut into lengths and bent. Machinery for the first-named purpose is described. The upper roll "has on its periphery suitable projections " arranged at proper distances apart to impress the grooves " into the lower surface of the bar." "The periphery of the " lower roll is formed to give to that side of the lower passing " bar which faces it the tapered or bevilled shape required to " form the inner sides of the upper surfaces of the shoe."

[*Printed, 4d. No Drawings.*]

A.D. 1871, May 3.—No. 1197.

WALLEN, Thomas.—(*Provisional protection only.*)—"Shear- " ing and clipping apparatus."

The "lower series of teeth or cutters is by preference " 'rigid,' and is secured to a plate with a handle thereon. Upon this plate is mounted a cam or plate with a cam groove " in it." In the cam groove works a "stud attached to a lever " or arm extending to the cutting end of the apparatus, " where it is secured to the upper cutting plate."

[*Printed, 4d. No Drawings.*]

A.D. 1871, May 10.—No. 1264.

HOLLAND, William.—(*Provisional protection only.*)—Horse clipper.

A suitable comb-plate with a handle is employed. On this plate is cast or otherwise formed a "transverse projecting tenon " bar extending completely across the plate, and parallel to " the spring of the teeth." The cutter bar "is cut with a " dovetail or tenon groove to suit the projecting tenon on the " guiding plate," and "contains a slot parallel and over the " groove so as to permit of the sliding action of the cutter bar " along the tenon slide." The parts are secured "by means " of a compound screw pin passed through the guide plates, " the projecting tenon and the slot of the cutters, then through " a curved but flattened spring passing on the cutter bar."

The moving cutter is driven by a quadrant rack on the end of the moving handle, gearing into a rack formed on the cutter plate.

[*Printed, 4d. No Drawings.*]

A.D. 1871, May 12.—No. 1284.

ROGERS, Silas. — (*Provisional protection only.*) — Horseshoes.

The shoe is "in two parts." One part is thinner than the other, and "is screwed or otherwise securely fixed to the "hoof." It has in it "two or more slots tapering both "longitudinally and vertically, and another slot in connection "with a keyway." "The thicker part of the shoe has fixed "to it snugs or projections corresponding with the tapered "slots, and also another snug or projection having a groove "to correspond with the keyway." The two parts of the shoe are thus united. For roughing, "the holes in the moveable "part of the shoe are countersunk to receive the calks, which "are kept in position by the fixed or upper part of the "shoe."

[*Printed, 4d. No Drawings.*]

A.D. 1871, May 27.—No. 1424.

PRICE, Edward, and THOMAS, Charles.—Horse clipper.

The handle of the fixed cutter-plate is hollow, and both the fixed and moveable cutter are formed with long stems which are contained in the said hollow handle. "The extreme end "of the shank or stem of the moveable cutter turns on a pin "or centre at the outer end or base of the said hollow handle. "The securing of the shank or stem of the fixed cutter in the "hollow handle is effected by a screw pin at the top or inner "end of the hollow handle." "The oscillatory motion of "the moveable cutter is effected by means of a lever turning "on a pin or centre screwed to the plate of the fixed cutter. "A nearly circular recess is made in the moveable cutter in "which a tubular projection on the inner end of the actuating "lever works. This tubular projection is furnished on one "side with a tooth which takes into a straight slot at the "bottom of the circular recess in the moveable cutter. By "moving the actuating lever to and from the fixed handle,"

" the tooth of the projection described works in the recess in " the moveable cutter, and gives a reciprocating movement" thereto. The moving cutter is held and guided by a guide plate attached by screws passing through slots in the moving cutter, and secured in the fixed plate.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1871, June 23.—No. 1654.

CROSSMAN, Craufurd, and FERGUSON, Joseph Henry.—Horse-shoes.

The shoes are secured by straps. They are made with a rim fitting the foot, and straps are attached to projecting pieces on this rim. The straps are "carried round the hoof and are " connected with a back strap or back piece made of leather," &c., "and adapted to fit the back of the foot." "The lower " part of the shoe which comes in contact with the ground " is in some cases formed of a steel plate grooved or otherwise " shaped so as to give a good foothold." This plate is attached by screws, and can be renewed when worn out. The shoes may be made "to cover the lower part of the hoof, " or to leave the frog or centre part of the hoof or foot " uncovered."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1871, June 26.—No. 1669.

BENTLEY, William.—(*Provisional protection only.*)—" Instrument for administering medicine balls to horses and other " animals."

A tube has at its end a "tubular chamber" in which works a piston attached to a piston rod in the tube. The piston rod is forced forward by a spring. A stud on the rod works in a slot in the tube, and by giving the rod a partial turn, the stud is locked in a cross slot, so that the rod is held back against the spring. The ball, &c. to be administered is placed in the chamber and the rod being released the piston drives it forward down the animal's throat.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1871, July 13.—No. 1835.

SAUNDERS, Robert.—(*Provisional protection only.*)—Horseshoes.

"Raised sockets, recesses or grooves" are formed in the shoes, and are filled in with "wood, wire, or such other "substances as will best ensure grip at every tread." The material preferred is "cane cut in short lengths and lodged "endways and to be held there by suitable contrivance." "The said sockets or recesses may be made in clusters, or "they may be separate from each other, or in one continuous "groove."

[*Printed, 4d. No Drawings.*]

A.D. 1871, July 25.—No. 1947.

BREWER, Edward Griffith.—(*A communication from Guillaume Edard and Jacques Edmond Bazault.*)—Belts for preventing sea sickness, &c.

The belts may be applied to the bodies of animals. They are made of fabric quilted and stuffed with "oxide of iron or "some other magnetic mineral." They are secured by buckles, buttons, &c. They may be used for "protection from contagious "diseases, such as yellow and typhus fever." Clothing may be made in the same way and used for the same purpose.

[*Printed, 8d. Drawing.*]

A.D. 1871, July 28.—No. 1981.

MARSDEN, Henry Melton.—Shears.

The shears may be employed, among other purposes, for shearing "the coats of animals." They are made of combined iron and steel, the two metals being arranged in any suitable way. Sheets or strips of the combined metal are cut into pieces of suitable form. The inventor says, "I then "proceed to thicken the back of the blade when needed, and "then bending forward the heel of the blade, I first turn or "twist the blades till they stand in a position nearly vertical "to that portion of the blank intended to form the shanks "and bow, all that is then necessary is to hollow the shanks "and form the knees," when the shears are ready for finishing in the usual way. The blade is ground in a different manner according as the steel is in the centre of the blank or at the side.

2. The shears are made " in two or three parts." When made of two parts, each shank blade and bow form one part. When in three parts the bow forms one part, and each shank and blade another. The parts are united by rivets, or " the " extreme end of the shank, formed specially with a pro- " jecting fish-tailed or T-headed end, fits into a suitably formed " hole in the bow, while the extreme ends of the bow are " extended and hollowed to fit underneath the shanks to " which they attached and fastened."

3. Making the shears of " good selected iron or semi-steel," and " making the parts for the cutting edges into real steel " of suitable hardness by a process of cementation." In carrying out the process, the parts to be converted are cleaned by abrasion or by using acids. The parts to be kept soft are covered with a refractory material and the parts to be hardened with charcoal. The cementation process is effected prior to the forging.

4. Making the shears of " rolled or tilted strings " of steel, &c. The " strings " or rods are cut into suitable lengths; the parts where the junction of the shanks and bow comes are bent; the points and parts for the shanks are narrowed by rolling; and the thinner parts thinned down by a second rolling, or by hammering.

When necessary the " edge of the blade " is bent up and the shanks hollowed; after this the shears are finished in the usual manner.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1871, August 10.—No. 2102.

UPTON, John.—(*Provisional protection only.*)—Horse-shoes.

The shoes are of cast steel, and are to be attached without nails. They are " to be made and sold in various sizes and " shapes distinguished by numbers or letters." They " are " made in two parts jointed together at the front or at one " side of the toe caulk." " Outside each heel is a short pro- " jecting clasp or clamp, which clips the heel of the hoof, and " towards the front on each side of the toe is a longer clamp " extending upwards to nearly the top of the hoof and "sloping backwards." Straps attached to the shoe are passed round these clamps and secured by lacing. "Where "toe and heel calks are used," it is proposed to "slope the "latter backwards and the former forwards" to give a better foothold. "The inside of the shoe is bevilled outwards so as "to prevent a clog or cake of snow or earth from stopping in "the same."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1871, September 2.—No. 2321.

CURTIS, Dexter.—"Harness and saddles."

The improvements consist in lining the parts of the harness which touch the skin with zinc "or its alloys," "which metal "is well known to have a healing and hardening effect upon "the part of the skin to which it is applied." The drawing shows a "pad, cap, or filling piece" set in the top part of a collar. This "is formed by rivetting or otherwise securing "two curved plates of zinc together in such manner as to "leave a space for the circulation of air between them," so as to keep the lower plate cool. "The ends of the under plate "are bent up slightly." "Loops are stamped or formed on "the upper plate for securing the pad by straps to the upper "part of the collar." The collar and harness may be formed "in three parts combined together and lined with zinc, the "upper part being made of wood bent to suit the shape of "the neck."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1871, September 7.—No. 2363.

SMITH, Thomas James.—(*A communication from Auguste Lengelée, Leon Bouttier, and Charles Vincent.*)—Horse clipper.

The moving cutter consist of a pair of blades mounted on the front ends of a Y-shaped piece. This piece is pivoted to the moving handle, and at its hinder end is a screw by which its ends carrying the blades can be forced down upon the teeth of the comb-plate. The moving handle itself is pivoted to the plate in the usual way,

[*Printed*, 8*d*. *Drawing*.]

A.D. 1871, September 18.—No. 2458.

FRYER, Daniel, and STEERS, Robert.—(*Provisional protection only.*)—Roughing horses.

Pieces of leather, rubber, gutta-percha, cork, felt, &c. are secured by wires to the shoe, suitable holes being "made in "the hoof at its point of contact with the shoe."

[*Printed, 4d. No Drawings.*]

A.D. 1871, September 19.—No, 2464.

DREW, Thomas Henry.—(*Provisional protection only.*)—Horse clipper.

"A revolving disc from which or to which the cutters "may be formed or applied," is mounted on a plate of steel "so formed as to present a circular form in the front, into "which circular part parallel teeth are cut so as to form a "comb." A handle is fitted to the fixed plate, and the revolving plate is driven by spur-gearing and a handle. If a reciprocating motion is required, it is provided "by removing "the gearing and applying a second handle to a stud or fulcrum secured to the comb plate, the end of which handle "has an opening which engages with a stud radially "placed on the cutting disc or revolving cutters."

[*Printed, 4d. No Drawings.*]

A.D. 1871, October 4.—No. 2620.

JONES, David. — (*Provisional protection only.*)—Generating and applying vapours.

The vapours are to be used for medicinal purposes in treating horses and other animals as well as men. The "fluids or "medicinal matters from which vapours are to be generated" are placed in a portable boiler heated by a Bunsen or other gas-flame, a spirit-lamp, &c. Or a jet of steam from the boiler may be led through a vessel containing the "medicinal "matters." In either case the vapour may be inhaled or applied by means of "a chamber surrounding or enclosing the "part affected by disease or through a sponge or other suitable "medium." The Provisional Specification describes two sorts of chambers available for treating the human subject, one for use when the patient is in bed, and the other so formed that the patient's head is outside the chamber while he is seated within it.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1871, October 13.—No. 2711.

JOHNSON, John Henry.—(*A communication from Jean Baptiste Marie Prosper Closson.*)—(*Provisional protection only.*)—" Shear-" ing or cutting the wool or hair of animals."

" The said clipper consists of a circular knife or saw com-" bined with a comb held in a convenient frame." It is driven by compressed air supplied through an india-rubber tube and actuating a " rotatory engine " of any suitable construction. " The simplest form would consist of a small " helical or volute shaped tube, through which the compressed " air would issue, and by so doing would not only impart a " rotatory motion to the same, but would blow away the hair," and prevent the cutter from clogging.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1871, October 27.—No. 2885.

PARKIN, Isaac, and LEWIS, John.—(*Provisional protection only.*)—Roughing horses.

Holes are drilled in the shoe, and into these holes are screwed " studs with three, four, or more chisel shaped wings " on the face of them, or three, four, or more spike shaped " teeth," the " wings " or teeth being hardened.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1871, November 14.—No. 3065.

GREAVES, John.—Horse-shoes.

The shoes have grooves at the toe and heel. Into these grooves, when roughing is required, are driven " sharpeners " made of steel." " When not required for roughing these " moveable sharpeners are readily knocked out of their places, " and supplied with plain toe and heel pieces."

[*Printed*, 10*d*. *Drawings.*]

A.D. 1871, November 22.—No. 3155.

BEESON, John Swannell.—Horse-shoes.

The invention "consists in making depressions or cavities" in the shoes, "such depressions or cavities commencing from "the outer edge of the shoe, and extending by preference "quite across the shoe to the inner edge." They "gradually "become narrower and shallower from the outer to the inner "edge, so that they are somewhat of wedge form. The effect "of this is that when the horse is travelling over a gritty "road the depressions get filled with grit," and this "forms a "roughing to the shoe when the horse gets upon a slippery "pavement."

[*Printed, 6d. Drawing.*]

A.D. 1871, November 24.—No. 3185.

SIMS, Francis Montague.—(*Provisional protection only.*)—Horse-shoes, &c.

Strips of india-rubber, gutta percha, &c. are let into grooves in the surface of the shoe. The strips are to be applied after the shoe is attached to the hoof, and are secured "by rivets or "clips with the head uppermost." "A washer or plate is "contemplated to be used between the rubber and the rivetted "over or clipping part of the fastening," or screws may be used "with the head external, instead of being covered." The shoes may also be made "with material to prevent slipping in a mass or piece partly lying between and acting as "a cushion between the shoe and the hoof or foot, and partly "projecting through and standing proud of the shoe." Rubber, &c. is used for the purpose "and it is contemplated to "employ strips, bands or ties of metal placed across the projecting rubber, which it is intended should occupy the "entire area of the hoof excepting so much as may be occupied "by the frame which is to enclose it."

[*Printed, 4d. No Drawings.*]

A.D. 1871, November 25.—No. 3195.

ATKINSON, Thomas.—(*Provisional protection only.*)—Treatment of pleuro-pneumonia and foot and mouth disease.

"A liniment composed of three of parts tincture of iodine and

" two parts of spirits of ammonia" is applied externally to " the throat and trachea or windpipe, and also on the sides of " the animal over the seat of the lungs." " When the disease " is attended with murrain or constipation of bowels, 1 drachm " of calomel and ½ an oz. of gentian powder mixed in about " one pint of linseed gruel is to be administered." In foot and mouth disease, " a mixture of borax and honey is to be " applied to the tongue and mouth of the animal."

[*Printed, 4d. No Drawings.*]

A.D. 1871, December 23.—No. 3485.

CLINCH, FREDERICK.—Horse-shoe pads.

A pad of vulcanised india-rubber is fitted to the foot. This pad is made of " suitable form to pass in between the parts of " the shoe of the animal and within the inner surface of the " inner edge of the shoe and the under part of the foot." It forms " a continuous surface, but " projecting somewhat " beyond the treading surface of the shoe," in order to give foothold on asphalte or slippery pavement. The pads " are " applied by simply bending so as to collapse the edges thereof, " and allowing them to spring into the parts of the shoe and " foot." They can be removed when not required.

[*Printed, 6d. Drawing.*]

A.D. 1871, December 28.—No. 3498.

KELLEY, EDWARD WATSON.—Horse nail machines.

The nails are punched and finished cold. In the punching machines a number of plungers are operated by cams on a horizontal wheel driven from a shaft above. The dies are mounted on the ends of these plungers, the female dies being mounted on a table below, perforated so that the nails may fall through. The " stock " from which the nails are punched is fed forward by a ratchet movement; as the nails are punched out they fall on endless bands below, which convey them to one of a pair of rolling machines, placed on either side of the punching machine. One of these machines takes the nails falling with their heads in one direction, the other taking those that fall with their heads in the other. The rollers are formed in segments, and both the upper and lower roller " have engraved on their surface part of a nail or nails."

After passing these rollers the nails pass to " pointing rollers " in which the nails " are rolled with sharp chisel-like ends." Next they go to a " clipping wheel " which is a " polygonal " drum on the circumference of which is attached a number " of stationary male dies " " of a section like the nail when " clipped." As the nail leaves the " pointing rollers " it is received by a pair of movable dies which carry it to the " clipper ;" these dies " pass between stationary female die- " plates made of hardened steel and of exactly the shape of " the ready made nail, when the projecting parts of the nail " rolled is easily clipped off." The finished nail then falls into " a receptacle below."

[*Printed*, 1s. 10*d*. *Drawings*.]

1872.

A.D. 1872, January 17.—No. 139.

MORE, John Walter, and NORMAN, John.—Clipping horses.

The upper comb plate, instead of being worked by a handle pivoted directly thereto, is connected to its handle by a link-pin jointed to the plate and to the handle, which is pivoted to the fixed plate.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1872, January 30.—No. 280.

ELLIS, George Henry.—(*Provisional protection only*.)—Horse-shoes.

The shoes consist of " foundation plates " and " wearing " plates." The former are " thin plates of metal in the " shape of a horse-shoe jointed at the toe upon a small plate " and toe cap." They " have each two or more ears turned " up having small spikes which fit round the hoof, and the " spikes penetrate slightly therein. At the heel ends of these " plates are a pair of studs, and the shoe is fitted and held to " the foot by passing an india-rubber band wire, or other

" suitable contrivance around these studs and connecting the " heel ends of the plates firmly together." The " wearing " plates" are fitted to the above plates by screws or otherwise. They may be " plain or moulded with 'honeycombed' " or rough surfaces" or they may be "entirely of lead, " leather, gutta percha, felt," &c: They may also be " per-" forated to admit of frost pieces or spikes being readily " inserted therein."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, February 1.—No. 325.

JOHNSON, John Henry. — (*A communication from Charles Motier Nes.*)—" Manufacture of iron and steel."

The invention relates to various applications of a " magnetic " silicide of iron ore, sometimes known as codorus ore." Amongst these is a method of steelifying such articles as horse-shoes. The shaped articles are placed in a molten bath of the ore "alone or mixed with mill cinder or other ingre-" dients." As soon as they have attained a white heat they are taken out. They may be chilled in water, or cooled down in a sand-bath.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, February 5.—No. 378.

HOLLAND, Henry.—Horse clipper.

The clipper may be worked by a spring, or by hand. The cutter may be a comb-plate reciprocating against a fixed plate, or there may be a helical cutter, acting against a fixed comb-plate.

When a spring is employed to work a reciprocating cutter, " on the upper side of the moveable plate is a short rack, over " which rack two pinions on the end of two close and parallel " shafts are situated, the said shafts being geared together by " pinions on their outer ends. The first described pinions, " namely, those over the rack, have but two teeth each, the " said teeth being opposite to each other on the shafts, and " the shafts being so geared together that when the teeth on " one shaft are in a vertical plane, the teeth on the other " shaft are in a horizontal plane. By the rotation of the said

" shafts the pinions over the rack alternately gear with and " ungear themselves from the said rack, one coming into gear " when the other is gone out of gear, the geared shafts rotate " in opposite directions and their action upon the moveable " cutting plate is to give it the required reciprocating motion " upon the fixed cutting plate." " The rotation of the said " shafts is effected by a coiled spring situated in a barrel, " which spring barrel drives the said shafts through a train " of toothed wheels provided with a flyer to regulate the " motion."

When a rotary cutter is used, it is driven by a train of toothed wheels from the spring barrel.

" When the clipper has to be worked by hand, the fixed and " moveable cutting plates are arranged as first described, but " the driving and gearing mechanism is dispensed with, and " in place thereof a pair of levers or handles is employed. " One handle is fixed to the stationary cutting plate or the " covering cap, and the other or moveable handle works on a " pin passed through the two handles and made fast to the " fixed cutting plate. On the top end of the moveable handle " a tooth or stud is fixed which takes into a rack or cup on " the moveable cutting plate. A spring is fixed between the " two handles, which tends to separate them or keep them in " an open position. By grasping the two handles by the " hand and pressing them together the moveable cutting " plate is made to move in one direction on the fixed one, and " by relaxing the pressure on the handles the spring between " them separates them, and gives the return motion to the " moveable cutting plate."

[*Printed*, 1s. 2*d*. *Drawing*.]

A.D. 1872, February 7.—No. 395.

SMITH, George.—Horse clipper.

The handle which operates the movable cutting plate is caused " by an extension of the end thereof, to work in an " elbow-shaped slot (of any suitable angle) thus causing " double cutting action of the teeth by a single opening and " closing movement of the handles, or the slot may be " formed on or in the lever point of a crank or worked over " a pin." The upper plate is guided in its sliding movement over the lower plate by two slots working over pins in the lower plate. There is "a projecting rib on the under side " of the plate " " serving while the clipping instrument is in " use to keep it level." The handles are opened by means of a spring.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1872, February 17.—No. 518.

McENTEE, William Charles.—(*Provisional protection only.*) —Horse-shoes.

The shoes are of the ordinary form. A number of holes are made in the shoe " by preference tapering from the upper or " inner side of the shoe to the under or wearing side." In these holes are inserted pieces of vulcanised india-rubber or other similar material, which project slightly beyond the surface of the shoe. Lead or other soft metal may also be similarly employed.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, February 26.—No. 609.

CLARK, Alexander Melville.—(*A communication from Julia Ann Wills, and Lucy Segar Kingsland.*)—" Machinery for " finishing horse-shoe nails."

The nails are fed into the machine by a horizontal screw, under which is a guide formed with an " approximately scroll-" shaped lip," which turns the nails from a horizontal to a vertical position. At the end of the screw is a groove in the screw, or a channel in the bed, which allows the nail to pass. At this point a pusher comes against the nail and carries it on to a bed. Here " the nails are held by a movable pin or " disc clamping them by their narrow sides between it and " a fixed die over a bed former, and rolled on the upper side " by a roller die in the end of a reciprocating bar which is " governed by a roller guide and former above the bed die. " A holder is hung above the bed die and arranged to cover " over the head of the nail as soon as the roller die passes " therefrom towards the point, and prevents the nail from " bending upward." The clamping dies open as the nail passes from under the roller, and the pusher discharges it.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1872, March 2.—No. 657.

JOHNSON, John Henry.—(*A communication from Milton D. Whipple and Lyman W. Whipple.*)—" Apparatus for making " wrought nails."

Horse-shoe and other nails are made from a coil of wire the end of which is led through a portable furnace on its way to the machine. The rod is held by a " gripper " mounted on a sliding plate which is traversed to and fro a distance equal to the length of a nail by the action of a cam. The gripper tongs are closed by a wedge piece and opened by a spring. When the gripper has carried the rod forward it opens, and the rod is seized by a " secondary gripping apparatus " to which an alternate transverse motion is given to carry the rod alternately to either of two anvils. This consists of two plates with holes therein through which the rod passes. One of these plates slides vertically on the other and grips the rod when it is passed through the holes. There are two hammers mounted on inclined shafts at right angles to each other and driven by bevel gearing from the main shaft. " They are " supported and turn in bearings affixed to vibrating back " pieces which are themselves supported by strong pivots " passing through the main frame. These pivots are the " centres of motion of the vibrating pieces, and the lower " ends of these parts are thrust diagonally upward by the " direct action of bars which are moved by cams or wipers " carried by the bottom shaft of the machine. These bars " traverse in guides or boxes, and a part of their length is " formed into a screw provided at the upper end with nuts " that abut upon the lower ends of the hammer shaft vibrat- " ing pieces. Springs attached to the vibrating pieces bear " against the sloping sides of the anvil and serve in conjunc- " tion with gravity to bring the hammer shaft plates back " to position." By means of a cam and quadrant plate the gripping plates are traversed to and fro across the machine to bring the rod alternately on each anvil. Another cam brings a cutter down on the rod and severs the finished nail, a bar being brought down on the rod to hold it while the cut is being made.

[*Printed*, 1s. *Drawing.*]

A.D. 1872, March 4.—No. 662.

FITZPATRICK, BERNARD.—Clipping horses.

The comb plates are "each about the fourth of a section "of a circle." The teeth are parallel. "The top comb is "about one-quarter of an inch less in width than the bottom "comb, which latter is flat and stationary, the top comb "working upon a centre, which gives the clip precisely the "same as a pair of scissors, two stops being placed at the "heel of the bottom comb to prevent over action."

[*Printed*, 8*d*. *Drawing.*]

A.D. 1872, March 7.—No. 699.

ARNOLD, JAMES. (*Provisional protection only.*) "Appliance "for administering balls and other medicines to horses."

A bell-mouthed tube has a piston sliding therein. To the mouth of the tube is fitted "a mouth-piece made of some "flexible material, such as india-rubber." "The piston rod "carries at the mouth-piece end of the tube a button, the "diameter of which corresponds as nearly as possible with "that of the mouth-piece. The piston rod is moved by a "finger or thumb-piece at the other end of the tube, and in "this way the button in the flexible mouth is moved back-"wards and forwards."

The instrument is fitted with a handle and a "hook or "other appliance to steady it."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1872, March 7.—No. 701.

CLARK, ALEXANDER MELVILLE.—(*A communication from Arthur Quinn.*)—(*Provisional protection only.*)—Horse-shoes.

1. The shoes are made of vulcanised india-rubber or other "equivalent substance" moulded or otherwise formed.

2. The shoes are made of iron or steel combined with india-rubber, "by enclosing a bar of iron or steel in an exterior of "india-rubber, or by an upper plate of iron or steel and an "under surface of india-rubber or other equivalent substance "fastened together." The shoes have calks of any suitable form, and are secured to the hoof by nails in the usual manner.

The shoes are intended to prevent slipping on ice, &c., for tender feet, and other purposes.

[*Printed, 4d. No Drawings.*]

A.D. 1872, March 20.—No. 846.

LEBACQ, François. — (*Provisional protection only.*) — Horse-shoes.

The invention is only described by means of a sheet of drawings and references thereto. The drawing shows various arrangements of "channelings" or groovings upon the surface of the shoe.

[*Printed, 6d. Drawing.*]

A.D. 1872, March 27.—No. 928.

PRINCE, Thomas Tennant, and BLAKEMORE, Ramsey.—(*Provisional protection only.*)—Horse-shoes and nails.

A strip of india-rubber, &c. is inserted in a groove in the under side of the shoe. The groove is by preference formed with a dovetail to hold the rubber therein. "The nails are "made with a shoulder or thick portion under the head in "order that the thick portion may pass through and retain "the pad, without unduly jambing the same, while the "smaller portion or pointed end of the nail passes through "the metal and into the hoof of the animal, and with its "shoulder holds the shoe."

[*Printed, 4d. No Drawings.*]

A.D. 1872, March 30.—No. 950.

BROWN, William Morgan.—(*A communication from Thomas House Fuller*).—Machinery for making horse-shoe nails.

The nails are punched out of a strip of plate iron on which cross ridges have been rolled to form the nail heads. The strip is clamped on a slide in which are grooves to receive these cross ridges. By means of a ratchet wheel and pall the slide is caused to traverse across the machine in such a manner as to bring the whole breadth of the strip under one or the other of a pair of punches which cut it up into nail blanks leaving only the portions at the edges of the strip as waste. When the whole width of the strip has been acted upon, "the

" stock is released, pushed forward under the punches the " distance between the adjacent ribs on the stock, and re- " clamped." The punches are so shaped that they " will " strike upon that part of the metal which is to form the " nail point in advance, and will bend or deflect the metal of " the nail or nail blank before the cut takes place that makes " the top surface of the nail head." This " bending of the " nail metal at the point causes the dies and punches to cut " the nail head tops at an angle less than a right angle with " the surface, against which the punches come in contact, " thus giving prominence to the nail heads in line with their " points." The blanks are next treated in a tumbler, from which they pass into a hopper. From this they are thrown out by a rotary brush. This brush is rotated by two opposite ratchets, one of which is moved three teeth whilst the other is moved two. The brush thus " moves in opposite directions in " the proportion of three to two, so that the gain of motion " in one direction, resulting from the two opposing impulses, " is but one." From a chamber into which the blanks are delivered they pass into a slot in which they hang by their heads with their points resting on a bar. An up and down movement of the bar causes the blanks to travel gradually along the slot, till they are delivered to recesses in a wheel which carries them over and delivers them in a reversed position on its other side, into a receiver with a vertical opening of a size to receive the blank which passes through at the bottom on the removal of a plate which closes the opening. This receiver is arranged to turn half round if a blank is delivered to it with its edge in the wrong direction, so that it delivers all the blanks turned the same way to a tubular conveyer which guides them to a set of roller dies. By these the shank is rolled out. From it the blanks pass through guide tubes to " a surfacing and pointing roll, the movement of " which roll is graduated from the movement of the shaping " rolls, so that the head of the blank passes directly into the " head-receiving recess of the lower roll; with this lower " roll is combined a friction roll of larger diameter, and the " negative action of this roll in connexion with the positive " movement of the other roll causes the nail head to be bent over " toward the die roll, and against a vertical guide, by which " guide the nail is directed, so that as it emerges from the

" lower roll it is straightened." " On the die roll is a taper " surface, the action of which is to bevil point the nail. As " the head emerges from the lower rolls it is seized between " two nipper jaws which close upon it, and these jaws draw " the blank down until it comes directly in line with the end " of a punch, which is of the exact form of a finished nail; " this punch being directly opposite a die in a die plate, " which die is of the exact form of the punch. When the " blank is thus presented between the punch and die the " punch moves forward and carries the nail blank with it, " forcing it through the die plate and cutting from it all " redundant metal, bringing the nail shank to its ultimate " form."

[*Printed*, 1*s*. 6*d*. *Drawings*.]

A.D. 1872, April 26.—No. 1247.

LEWIS, John. — (*Provisional protection only.*) — Horse-shoe studs.

Improvements on No. 2885, A.D. 1871.

The studs are screwed into holes in the shoes. The inventor says:—" I screw as many studs into them as may be desired, " which I make of a star shape on the face, which divisions " of such shape I carry to the shoulder or up to the threaded " part going into the shoe;" " in the centre of this star I " form a centre, projecting to the face of the outer wings of " such star, but immediately round such centre I deflect, " leaving the outer points and centre prominent, and taking " such deflected parts down, forming after worn some time " a chisel shaped star."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, April 27.—No. 1258.

BENSON, Martin.—(*A communication from William Lewis, and David Tier Way.*)—" Elastic hose stockings for horses."

The stocking is meant to prevent strains or sprains. It is an " elastic india-rubber stocking moulded to fit the part of " the leg of a horse to which it is to be applied, and ribbed " and stiffened by pads to prevent sagging and slipping down

" at the top, and perforated to permit the escape of perspiration." The stocking is secured by lacing up the front, by straps and buckles, or by other suitable means.

[*Printed, 6d. Drawing.*]

A.D. 1872, May 2.—No. 1334.

DARLOW, William.—(*Provisional protection not allowed.*)— " Magnets for curative purposes."

" Magnets or magnetizable substances " are to be combined with fabrics, the resulting material being made up into various articles, amongst which are mentioned " harness horse-cloths " or other appliances for animals."

[*Printed, 4d. No Drawings.*]

A.D. 1872, May 4.—No. 1356.

MARCHANT, Robert Mudge, and ANGELL, Benedict John. —Horse-shoes.

The shoes are grooved on the under surface, and a strip of india-rubber is set in the groove, so that it forms the bearing surface. A strip of rubber is used, " the sectional shape of " which is a segment of a circle," and the sides of the groove are curved to correspond. A worn strip can be removed and a fresh strip inserted without removing the shoe. " Metal " filings, grit, or other suitable material may be incorporated " with the rubber." " A roughing may be obtained by passing " pins through the rubber." " When the rubber is com- " pressed by the weight of the horse, the points of the pins " will project " and will be " withdrawn on the lifting of the " horse's foot."

[*Printed, 8d. Drawing.*]

A.D. 1872, June 10.—No. 1741.

MARSDEN, Henry Melton.—Sheep shears, &c.

1. The spring bow has a rib upon it, to which is fitted a ring or swivel. The neck is so made that the stops " shall be " double or connected with both sides of the shank." There may be a " double solid steel bow," instead of the usual form.

2. Improved form for the blanks, and method of cutting them from the strip without waste. Also the blades are "strengthened by extending the connection of the mark side "of the shank end," "a little up the back edge of the blade "in the form of a flange or curve."

3. The blanks are doubled up, and the parts requiring reduction rolled "in this folded state."

4. In forging the blanks successive sets of forging tools are employed to bring them gradually to the shape required. These tools are figured and described in the specification.

5. The above improvements may be applied in making shears, as described in No. 1981, A.D. 1871, of combined, iron and steel. Also a recess may be formed in the strip of iron from which the blanks are to be cut, and a piece of steel welded into this recess. The strip is then divided along the centre of this steel lining.

6. The back of the blade may be strengthened by cutting away the "superfluous part" of the blank and welding it on the end of the shank or side of the blade.

7. In hardening the shears they are set with their backs in grooves in a plate which is placed in the furnace. Or the back of the blade may be held by tongs, or it may be covered with a "metallic jacket," before dipping the blade.

The Provisional Specification also refers to (1), a method of strengthening the blades of which the inventor says "I may "crimp them in the direction of the length of the blade at "the back adjoining the shank;" and (2), a method of bending the bow of the shears over a block by means of a pair of jointed levers.

[*Printed*, 1*s*. 10*d*. *Drawings*.]

A.D. 1872, June 17.—No. 1815.

ELLIS, THOMAS ATKINSON.—(*Provisional protection only.*)—Horse-shoes.

Method of attaching a "portable covering" of leather, &c. to horse-shoes. A "kind of narrow semi-elliptical band fitting "to the inner end of the shoe" is formed of spring steel. This band has "three or more clips turned down from each "edge so as to fit and secure the band firmly upon the shoe." "The clips which fit upon the wearing surface of the shoe

" are pierced, and two or more pieces of stout leather, making " together the size and shape of the shoe, are fitted to the " clips by lead rivets" with "projecting and rounded heads " or 'bosses.'" The shoes may be notched "upon their " inner edge at the heel," and " the ends catch in the 'notches,' " and prevent its being pulled off until the spring is released " by hand." Gutta-percha, india-rubber, &c. may be employed instead of leather.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, June 24.—No. 1903.

HUNT, Bristow.—(*A communication from Edouard Wehrlin.*) —Shearing sheep, clipping horses, &c.

The handles of the fixed and moving cutters are connected by a spring bend. One end of this is connected to the handle of the fixed cutter plate and the other is jointed to a lever pivoted to the plate. This lever is forked and carries at the end of each fork a cutter plate which works in the usual way over the fixed comb. Each arm of the fork carries a lever which is pressed down on the cutter blade by a screw so as to keep it down to its work.

In a smaller apparatus of the same character a single moving cutter only is used. The handles are formed like those of a pair of scissors; they are opened by a coiled spring surrounding the pin on which they work.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1872, July 1.—No. 1977.

MORGAN-BROWN, William. — (*A communication from Thomas House Fuller.*)—Horse-shoe nails.

Blanks are punched out from a strip of suitable metal, two sets of blanks being cut from each strip, and arranged " heads " and points, to utilize all the metal." The head of the blank is then " upset when cold by means of die jaws, which close " upon its opposite edges (its back being supported against a " plate) and a plunger or plungers that strike the head, two " plungers being preferably used, one smaller than the finished " head and the other of the size of the head, the first leaving " fins or projecting edges which the second presses down

" upon the top of the head." In shape the head is "preferably " made narrowest and thickest at the top with a bevelled top " surface." After the head is finished the shank is cold drawn between rolls.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1872, July 9.—No. 2070.

GUÈRIN, Pierre François.—Horse-shoes.

The under surface of the shoe is grooved out in a peculiar manner described, the nail holes being formed in the groove. The shape of the groove varies at different parts of the shoe, which is flat at the heels. The heels of the shoe "are turned " back inwards at an angle so as to cover the inflexural parts " of the feet up to their points of junction with the inside " edge of the sole." Part of the upper surface of the shoe is convex, and the hoof is rasped out to fit it.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1872, August 9.—No. 2374.

WILLIS, Robert.—(*Provisional protection only*.)—Clipping horses.

The moving cutter plate has a dovetailed slot in it which works on a tenon of corresponding shape on the fixed comb plate. The two plates are kept together by a spring adjustable by means of a screw. The pivoted handle terminates in a segmental toothed plate, the cogs of which gear with a row of cogs on the cutter plate. By this means motion is imparted to the cutter plate.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, August 15.—No. 2432.

MORGAN-BROWN, William. — (*A communication from Thomas House Fuller*.)—"Manufacture of horse-shoe nails."

In the process of manufacture the nail passes down vertically through two pairs of rollers, being guided from the first pair to the second by a "conductor." This conductor is a solid plate with a vertical passage narrowing towards its lower end. One side of the passage is formed of a spring valve, or door, which is pressed outwards by the nail if one or more nails are jammed in the passage, and opens, so that they fall out of the machine, instead of obstructing it. The sides of the passage flare outwards towards the door. A spring "interceptor" is carried into the passage and prevents more nails entering, when the door is opened. As long as the door is closed this is held back, clear of the passage.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1872, August 29.—No. 2568.

HILL, Henry Charles.—(*Provisional protection not allowed.*)—Horse-shoes.

1. The shoes are "of a cellular or hollow form" and have holes in them in which are inserted and secured by screwing or otherwise "plugs or studs or calking strips which may be "indented grooved or corrugated on their tread surface." The holes may also be filled in with lead, vulcanised rubber, felt, cork, &c.

2. "Rings or ferules made of vulcanised india-rubber or "lead or other metal" are "attached by nails to the horse-"shoe, and spreading around the nails so as to give a firmer "foothold."

3. Using "adjustable plates, shoe clips and calking studs "as a substitute for what is called 'roughing,' with a steel "or india-rubber spring inserted between the clip and the "shoe plate." Fitting "shifting studs to the back part" of the "shoe plates or clips" "to which studs are attached "springs." "Application of metal spring clamps or claws "working on a pinion pivot or pin."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, September 6.—No. 2653.

JACKSON, George.—Horse clippers.

The clipper is formed of two comb plates with guide pins and slots, actuated by a fixed and a movable handle, the latter jointed to the bottom comb plate. "The extreme end "of the short arm of the moveable handle is cranked or bent "at right angles or nearly so to the other part, the said "cranked end being furnished with a stud. Between the "fixed and moveable handles of the clipper, and parallel "therewith, is a lever or link; the outer or bottom end of

" this lever is jointed to an arm on the fixed handle, and the " top or inner end of the said lever is provided with a stud " which takes into a hole in the moveable cutter; the joint " by which the said lever is jointed to the fixed handle is so " made as to permit of a little play." "At the upper end of " the said lever, and at a short distance below the stud which " connects it to the moveable cutter, is a second stud which " takes into a hole in the cranked end" of the movable handle.

Instead of the above arrangement, "to avoid the curvilinear " motion of the cranked end of the movable handle," "a link " situated and working at right angles to the short arm of " the movable handle may be employed in place of the said " cranked end; this link is connected at one end to the " lever between the two handles, a stud on the said lever " taking into a hole in the link and at its opposite end to the " short arm of the moveable handle, the connection of the " said handle to the link being effected by a stud on the latter " taking into a hole or eye in the former."

" The link described may be prolonged beyond the point " at which it is connected to the middle lever and the said " prolonged end be connected to the moveable cutting " plate."

[*Printed*, 1s. *Drawings.*]

A.D. 1872, September 19.—No. 2783.

VALLETON, Jacques Henri, and PLANQUE, Jules Emile. —Bread-making, &c.

Sea-water is used in making dough for bread, &c. in order to utilise the "salutary and medicinal properties" belonging thereto. It may be similarly employed in the manufacture of food for cattle, horses, sheep, dogs, &c.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1872, September 21.—No. 2798.

LEBACQ, François.—(*Provisional protection only.*)—Horseshoes.

The shoe has "grooves worked on the inner surface" "on " the posterior extremities." The grooves are so formed as

" to preserve a rim of greater or less thickness on the inner
" edge of the shoe on the upper surface, the rim never to be
" greater than the thickness of the shoe and always on the
" level of the surface." " The horn of the foot is cut or
" paired in such a manner as to fit into and fill up the
" grooves."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1872, October 5.—No. 2941.

ROBBE, George.—(*A communication from Jean Michel Brune*
—" Treatment of what is known as ' foot and mouth disease '
" in cattle."

A preparation termed a " phenicated sulpho-tannate of
" iron and copper " is employed. It consists of 250 grammes sulphate of copper, 20 grammes sulphate of iron, 15 grammes powdered gall nuts, 1 litre of water, and 5 grammes phenic acid. The three first-named ingredients are boiled in the water and the phenic acid added when the mixture has cooled to 770° Fahr. To apply it, the pellicle covering the sore is removed and the lotion applied with a hair pencil.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, October 15.—No. 3037.

HUGGETT, John, and HUGGETT, John Albert. — Machinery for making horse nails.

Improvements on No. 2952, A.D. 1869.

The nail rod is rolled between rollers which form bosses for the nail heads. " To prevent the rod spreading laterally it is
" confined between flanges on the rolls." The endway thrust of the rollers is received by collars on them, secured in place by lock nuts. The flanges are bevelled " and have each two
" projections ". " which striking the ends of the nail rods as
" they are slidden down a guide trough to the rolls," " turn
" them on edge, and cause them at once and without any
" delay to enter the eye of the rolls." " To cause the rod to
" deliver out of the cavities of the roll, these cavities at every
" revolution of the roll are filled with tar " and oil, by the roller running partly in a trough filled therewith. In the machine for finishing the nails a chilled cast-iron roller, on

which the blanks are placed by hand, carries them below a plunger and between a pair of lateral dies which are forced against it. The roller is revolved by a ratchet and "claw "lever," the latter being in two parts united by a spring which yields to prevent breakage.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1872, November 2.—No. 3263.

MARCHANT, Frederic George. — (*Provisional protection only*.)—Horse-shoes and methods of attaching the same.

A number of hinged or spring pieces project up from the shoe and clip the hoof. A wire or band passes round all these pieces, being held by notches or holes therein, and is secured to lugs at the back. To one of these lugs the band is fixed, and it passes through the other being held by a screw or otherwise so that it may be tightened. India-rubber, &c. may be used to line the inside of the clip pieces.

In a modification of this invention a "flanged foot plate" is "interposed between the shoe and the foot." "The said "piece is preferably composed of two pieces pivotted to the "shoe at the front of the same, or the shoe itself may be "formed of two pieces jointed together at the front. The "said foot plate is formed of angle or L-shaped pieces of iron "or other suitable metal, the base of which is flat and rests "on the top of the shoe to which it is secured by the aforesaid "pivots, and by screws or rivets passed through countersunk "slots in the plate."

"At the back of the shoe the said plate is formed with "hooks or holes" through which is passed a "rod or wire" "provided with screw nuts or other devices whereby it may "be caused to draw the two parts of the plate or shoe together and thereby make them tight on the animal's foot." A strip of leather, india-rubber, &c. may be placed "between "the aforesaid plate and the shoe" and "around the inside "of the flange." Studs on the "foot plate" "project into "the hoof or behind the heel" to prevent the plate and shoe slipping. Dovetailed recesses may be formed in the shoe to receive studs for roughing.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1872, November 15.—No. 3405.

RÉ, JOSEPH.—(*A communication from Vittore Vezzoli.*)—"Machinery for manufacturing horse-shoes."

Two machines are described, one for bending the blanks and the other for stamping the shoes.

1. A slide, traversed to and fro in horizontal guides by means of a crank, carries jointed thereto a pair of levers the ends of which are fitted with rollers running in curved guides in a bed plate, on which is mounted a mandrel of suitable shape. By the action of these levers the blank is bent round the mandrel.

2. The upper die is forced down by an arrangement of jointed levers, operated by a crank. The prime mover may be a hydraulic or steam engine. "Moveable matrice plates" mounted in cast-iron blocks form the dies.

[*Printed*, 8*d*. *Drawing.*]

A.D. 1872, December 6.—No. 3691.

LAKE, WILLIAM ROBERT. — (*A communication from Albert Alden.*)—(*Provisional protection only.*)—"Horse-shoe nails."

The nail is formed so as to serve for a calk, and has also a shank "which when the said nail is driven enters a correspondingly shaped hole or socket in the shoe." The nail is of "the ordinary spike or taper form for being driven, and "at the end of the spike, which in an ordinary horse-shoe "nail is its head, it is made with a square or rectangular "shank that by an extension has a wedge or V-shaped calk." By preference the calk is of steel welded to the body of the nail.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1872, December 18.—No. 3837.

ROBERTSON, JOHN STEWART. -- Horse-shoes for frosty or "snowy weather."

A removeable "overshoe" is employed. This may be formed of a solid plate, or it may be of the ordinary horse-shoe form, or it may be "in the shape of the letter T, the heel points "being in this last case formed or fixed on the cross part,

" and the toe point at the further end of the other part." These points may be wedged in, or held by spring catches, pins, &c. The overshoe is secured by a strap passing round the hoof and through a metal loop attached to the toe of the shoe or to a flange hinged thereto. Instead of the strap an india-rubber band, or a metal strip tightened by a screw, may be employed. Projecting pieces on the overshoe are arranged to fit against the edges of the ordinary shoe, to prevent slipping. Also " there may be hinged to the inner edge of the " toe part a curved piece of metal with spring sides formed " with projections to catch the inside of the ordinary shoe " both at the toe and heels. When the sides of this curved " piece are drawn together it relieves the catches at the " heels, and the hinge action relieves the catch at the toe."

[*Printed*, 10*d*. *Drawing*.]

1873.

A.D. 1873, January 13.—No. 135.

NORMAN, John. — (*Provisional protection only.*) — Clipping horses.

Two comb plates are used, one fixed rigidly to a handle, and the other operated by a lever handle pivoted to the first. This lever handle is mounted " on an axis fixed below the " lower end of the moveable plate," and " a tooth or projection " from the moveable lever" works " within a recess cut or " formed in the lower end of the moveable comb plates." " The guide pins or studs" are " in a line with the line of " action of the tooth." Over the moveable comb plate is mounted a plate which has " a projection at its lower end to " pass over the stud or axis of motion of the lever handle, " and at its upper end is formed to bear upon the moveable " comb plate." " Two screws passing through such upper " plate, and through comparatively large slots in the moveable comb plate, serve to keep the upper fixed plate at its " upper end bearing down upon the moveable comb plate,

" whilst a screw or nut serves to keep such upper fixed plate " down on the lever handle."

[*Printed, 4d. No Drawings.*]

A.D. 1873, January 22.—No. 255.

ROSE, Henry Cooper.—(*Provisional protection only.*)—Roughing horses.

An additional shoe is fitted to the ordinary shoe. This temporary shoe is hinged at the toe, and is fitted with clamps which catch against either the inner or outer rim of the ordinary shoe. By means of a screw and nut at the heels, these clamps are forced against the rim of the shoe, and hold the temporary shoe in its place.

[*Printed, 4d. No Drawings.*]

A.D. 1873, January 25.—No. 308.

WIGHTMAN, Arthur.—(*Provisional protection only.*)—Horse-shoes.

The shoe is in two parts, one part secured to the hoof in the ordinary manner with nails, and the other, or wearing part, formed with hooks and lugs by which it is attached to the permanent shoe. The hooks fit over the heels of the permanent shoe and into a bevel at the toe, and the lugs, which are on the outer rim of the moveable shoe, are bent up to prevent the latter slipping backward and releasing the hooks. The " usual projections to prevent the horse from slipping " are formed on the lower shoe.

[*Printed, 4d. No Drawings.*]

A.D. 1873, February 5.—No. 426.

BROWN, George.—Horse-shoes.

The shoe is made with three dove-tailed grooves, one at each heel and one at the toe. Into these are fitted " dies " of hardened steel and of any suitable shape on their under surfaces, the upper surfaces being formed to fit the grooves. These are held in place by screws. The " dies " project sufficiently to keep the rest of the surface of the shoe clear of the ground.

[*Printed, 6d. Drawing.*]

A.D. 1873, February 11.—No. 492.

CARDOZO, Herbert George.—(*Provisional protection only.*)—Roughing horse-shoes.

The shoe is formed with a projection at the side in which is a square hole. A "rough" with a stem fits in the hole and is secured by a nut on the upper part of the stem, which is screwed.

[*Printed*, 6*d*. *Drawing.*]

A.D. 1873, February 21.—No. 661.

VAUGHAN, Edward Primerose Howard.—(*A communication from Charles Scheidecker.*)—Clipping horses, &c.

A single cutting blade works over a comb plate, being operated by means of a spring bow handle. A stop on the edge of the comb prevents the cutters opening too widely. The spring is bent so that it keeps the cutters bearing against each other.

[*Printed*, 8*d*. *Drawing.*]

A.D. 1873, February 22.—No. 678.

DURNFORD, Hugh Fraser.—Horse-shoes.

The ordinary shoe has several holes drilled and tapped with a screw thread in it. These holes are generally filled up with screw plugs, but when the horse is to be roughed, they enable a second shoe with suitable projections thereon to be attached to the ordinary shoe, a piece of leather being placed between. There is also a steady pin on the false shoe fitting a recess in the other.

[*Printed*, 6*d*. *Drawing.*]

A.D. 1873, March 5.—No. 786.

GRIGG, William.—"Application of electricity to horses and "cattle."

Electricity is to be used to cure and prevent disease, and to improve the animals' condition, "also in obviating the necessity "of exercising horses by running." Wires are attached to any parts of the animals by straps, &c., or the animals may be placed on metal floors connected to one pole of the battery, the other pole being connected to a wire attached to the animals. Any electrical generator may be employed, but the inventor specially uses his "electro-magnetic machine, gene-" rating electricity by means of batteries and wires" and his " electro-magnetic machine and batteries with positive and " negative poles." Baths may be employed, the animals being, in the inventor's words, "connected to my electro-" magnetic machine in such manner that the electric fluid " passes through them or on them, removing obstructions " and poisons of every nature, and depositing them at the " negative pole."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1873, March 11.—No. 871.

HORE, Charles.—Horse clippers.

Besides the pair of cutters there is a fixed comb. This comb is fixed to the plate secured to the fixed handle. The moveable handle is pivoted to this plate and operates both cutters simultaneously in opposite directions by means of studs, one behind and one before its pivot. The length of cut may be varied by means of packing pieces placed between the comb and the lower cutter plate. The handles are telescopic and can be set at any length by clamping screws.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1873, March 28.—No. 1164.

BULLOWS, Joseph, and BULLOWS, Alfred. — Horse clipper.

Two comb plates are used, connected by guide studs. "An " eccentric which has an handle fixed to it is fitted into a " circular hole in one plate and is able to turn about a stud " or axis fixed in the other plate" which carries the other handle.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1873, April 3.—No. 1228.

CLARK, William.—"Clipping or shearing horses and other " animals."

1. "Methods for obtaining a determined and adjustable

" friction between the cutter plate and under fixed plate." This is effected by making the upper plate concave, or using curved "friction plates" screwed down on the upper cutter plate. These plates are of various shapes.

2. The cutter is worked at an increased speed by means of a lever arrangement which causes each stroke of the handle to produce a double movement of the cutter plate. By means of compound levers, the speed may be still further accelerated.

The invention may be applied to the clipper described in Grayson's Specification, No. 3076, A.D. 1869. Smith's Specification, No. 395, A.D. 1872, is also referred to as not describing a similar invention to the present one.

[*Printed*, 1*s*. 2*d*. *Drawings*.]

A.D. 1873, April 9.—No. 1314.

TWIGG, George.—" Shearing and clipping apparatus."

" The guide pins upon the lower plate are formed with cross " heads passing through slots in the upper plate and capable of " being turned to cross the slots after being passed through " the top plate. When so turned a thin forked cutter plate is " slipped under each of the cross heads of the guide pins and " thus secures the two plates together.

" A wedge is formed under the heel of the upper plate and " housed in a groove of the under side of the same, and bearing with its lower edge on the lower plate; this wedge sets " up the top plate and keeps the teeth in position with those " upon the under plate. An adjusting screw may be used in " place of the wedge." " A single pin formed with a cross " head may be employed independently of the ordinary guide " pins if desired."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1873, April 14.—No. 1352.

HASELTINE, George.—(*A communication from James Watrous Guernsey.*)—" Machines for clipping or shearing animals."

The apparatus consists of a pair of circular toothed cutters mounted concentrically so that one of them can be rotated through suitable gearing from a shaft to which motion is given from a winch handle or otherwise. The handle by bevel gearing rotates a vertical shaft on the top of which is a frame, pivoted thereon and carrying bevel gear wheels to transmit motion to a horizontal shaft. This shaft may be jointed and have a bevel gear arrangement at each joint to permit of its being turned in any direction. At its end is the short shaft transmitting movement to the cutters.

A grinding machine is described in which the cutter is mounted on a slide that can be brought up to the grindstone. The cutter is mounted on a shaft, and by means of bands this shaft is driven as well as the stone.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1873, April 17.—No. 1385.

IVISON, Michael Wheelwright.—Sheep dip.

"A compound or mixture of green gas oil (procured by " destructive distillation of paraffin) with palm oil or other " greasy or fatty substances, and caustic soda, caustic potash, " water and glue." The proportions may be green gas oil" 200 parts by weight, palm oil, &c. 100, caustic soda 15, caustic potash 15, water 100, glue 12½. The soda, potash, and glue " are boiled in water till completely saponified," when the palm oil, &c. is added. The mixture is cooled down to 160° Fahr. and the "green gas oil" added.

" In using the dip it is dissolved in hot water, which being " effected, cold water is added and the whole stirred or " agitated until the liquid presents a creamy appearance." The proportions are; for "dipping," "1 pound of the dip " dissolved in 5 gallons of water for every 5 sheep," for " pouring," the same in 1 gallon, for "scab," the same in 2 gallons. For scab the dip may also be used as an ointment. For "smearing," "1 pound of the dip dissolved in 1 pint of " oil is employed for every three sheep."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1873, April 23.—No. 1461.

HAGGETT, William.—Treating iron and steel.

The invention consists in stamping or rolling bars, plates, &c. of iron and steel with a "a series of large or minute corrugations or undulations." The corrugations may be of any suitable character according to the article to be made.

For instance, plates may be "prepared and undulated of oval "or other suitable forms to be applied to horse and other "shoes to prevent slipping and afford other advantages."

[*Printed*, 1*s*. 2*d*. *Drawing*.]

A.D. 1873, May 5.—No. 1609.

TURNER, JOSEPH.—Sheep shears.

The shears are made "in three separate parts, namely, the "two blades and the shank and bow." The blades may be of best quality steel, and the shanks, &c. of inferior steel, or the blades of "iron and steel and the bow and shanks of iron."

The shanks and bow are made from a strip of iron or steel, the shanks being bent as required. The bow may be bent after or before the blades are affixed. The blades are stamped out of strips of steel or iron faced with steel of such cross section and width that two blades may be cut out of the breadth and have their backs thicker than their front edges. The blades are finished and secured to the shanks in any suitable way.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1873, May 10.—No. 1696.

CLARK, WILLIAM, and MARTIN, ROBERT.—"Clipping or "shearing horses," &c.

Improvements on No. 3076, A.D. 1869 and No. 1228, A.D. 1873.

The upper comb plate is kept down on the lower one by means of a curved "friction plate" bearing thereon and held by bolts passing through all the plates. This "friction "plate" may slide with the top plate, or it may be fixed to the lower plate with or without a spring between them. Instead of a single "friction plate," two such plates may be employed, one on either side of the central pivot on which the upper plate works.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1873, May 12.—No. 1728.

BÉTIS, PIERRE MARCEL.—"Clipping or shearing horses," &c.

The two blades are magnetised to cause them to work closer over one another. The moveable plate has a slot working over a pin in the fixed plate, and this "constitutes thus an "invariable guide in concert with the lip or edge of the foot," "which is fastened to the stationary comb to bind it to the "supporting blade" "of one of the handles." The "end of "the moveable arm" "carries a pinching screw" by which the blades are tightened on one another through the medium of a spring. A jam nut is also mounted on the screw. The "instrument is arranged optionally with straight or upright "combs," "or with curvilinear combs."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1873, May 23.—No. 1868.

THOMPSON, Joseph Rogers.—"Instruments to be employed "in performing the operations of 'sex-marking,' 'castrating,' "and 'tail docking' of sheep in particular, and young "calves."

A "lancet-shaped knife" is mounted at one end of a handle, and at the other "a pair of spring pliers," the jaws of which are "serrated or suitably roughened to enable them to obtain "a firm grip of the testicles and 'cord'."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1873, June 5.—No. 2005.

McWILLIAMS, Andrew Shannon.—Sheep shears.

A thumb rest is fitted at the back of one blade of the shears, and a rest to receive the fingers at the back of the other blade.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1873, June 6.—No. 2025.

SIMPSON, Alexander.—"Cattle food."

The object of this invention is to produce a "nutritious "food," "possessing but a small percentage of indigestible "fibre." The ingredients include "wheat, maize, oats, rice, "sago, beans, peas, lentils, charub beans, sugar, and salt, "also the compound known as Simpson's cattle spice, and "linseed, and the remainder of linseed and other nutritious "seeds and nuts after a portion of the oil has been abstracted "therefrom, such as cotton seed, the palm nut, and the "olive." The "grain and hard substances" are submitted to the "action of a baking heat either before or after the same "have been crushed." To these mixed in various proportions the sugar, salt, and spice are added. The whole is then ground between millstones after which it is submitted to a heat of 240° Fahr. for some hours in steam heated chambers or otherwise. The ingredients may be combined in different proportions, but in all cases heat is employed "to increase "the nutritive qualities of certain of the materials employed, "and to render the compound the more easy of digestion."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1873, June 13.—No. 2100.

LAKE, William Robert.—(*A communication from Henry Moran and Patrick Moran*.)—(*Provisional protection only*.)—"Adjustable horse shoes."

The object is "to provide a more radially adjusted and "more pliable fastening" for such shoes. It is "carried "into practice by rivetting to the side of the front slot in the "adjustable horse-shoe two metallic plates perforated with "holes which are also cut through the shoe itself. A strong "lacing of raw hide or other strong material is introduced "through the holes holding the shoe firmly or loosely to the "foot." "The ends of this lacing are fastened in holes cut "in an extra guard surrounding the upper part of the hoof, "passing through loops in the sides of the shoe, and in the "back connected to the back strap of the shoe." "In the "back of the bottom part of the shoe are cut two square slots "serving to receive a frog protector which is bent or rounded "according to the height of the frogs." "Holes or openings "for ventilating the hoof are cut through the material at "any place where it is found necessary." "By preference "india-rubber or similar elastic material should be used as "the most desirable for this adjustable horse-shoes."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1873, June 23.—No. 2184.

TOUAILLON, Charles.—(*A communication from Alexandre Guerriero Comte de St. Ange*.)—Horse shoes.

"These improvements consist in manufacturing the horse-

" shoes with numerous parallel or otherwise steeled cramps " and grooves." " This horse-shoe consists of a steeled part " " and of an iron part " " soldered together," the " steeled " part " forming the tread and containing the grooves.

[*Printed*, 6*d*. *Drawing.*]

A.D. 1873, July 7.—No. 2344.

BLUNDELL, WALTER.—(*Provisional protection only.*)—" Irrigating, sponging, syringing and administering injections " and douches to the human or animal body."

An india-rubber ball or flexible vessel of other suitable shape is fitted with a nozzle, " provided with suitable flanges, " one for insertion into the inlet of the vessel to hold the nozzle " securely thereto, another to receive a small india-rubber " hemispherical collar or washer to secure the sponge." The " sponge is so arranged in a hollow or dished form to resemble " a cup which when inverted serves to enclose or surround the " part to be washed, syringed, or otherwise treated, leaving an " internal space for the free flow of the liquid or water to the " affected part." Instead of a sponge a rose or other shaped outlet may be fitted to the nozzle. Fabric may be substituted for the sponge, and a syringe for the ball. The ball or vessel may be furnished with a " non-return inlet valve in addition " to the ordinary inlet, for the more rapid supply of liquid."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1873, August 6.—No. 2635.

PHIPPS, THOMAS LOVELL.—(*Provisional protection only.*) — Horse clipper.

Two comb plates are used. A slot in the moveable plate works over a rib on the fixed plate. A spring is kept down on the moveable plate by a nut on a screw set in this rib. The same screw also secures a cover over the moveable plate. The moveable plate is operated by a short arm on the moveable handle taking into a slot therein. The two handles are secured as follows. Two studs on the head of the fixed handle take into holes into the fixed plate. " The head of the fixed handle " is hollow or cut away, and the head of the moveable handle " or lever is passed under the hollow head of the fixed handle.

" By passing a screwed pin through holes in the said heads " and fixed cutter, and screwing a nut on its end, the said two " handles are securely connected to the fixed cutter, the " screwed pin described constituting the axis on which the " moveable handle or lever turns." The sides of the cut away part in the head " of the fixed handle serve as stops to limit " the motion of the moveable handle."

" The rib-like projection on the fixed cutter may be dispensed " with, and instead thereof a slight recess may be made in " the same place, the screw on which the spring is fitted " standing in the middle of the said recess." The spring is then formed so that " its middle portion is concave and its " ends convex." " The middle concave portion " " enters the " recess," and the spring is made thereby incapable of motion " about the screw as a centre." " The convex ends of the " spring press upon the moveable cutter, while the middle " portions of the spring passing through the slot in the " moveable cutter serve as guides."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1873, August 27.—No. 2825.

DURANT, JOHN.—" Administering medicines to horses, dogs," &c.

The medicine either in a liquid or powdered state is enclosed in a " gelatinous or membraneous capsule." The former is composed of gelatine alone or a mixture of gelatine and other material, as glycerine, suitable proportions for the mixture are ½oz. glycerine to 1lb. gelatine. The capsule is made by " dipping an oiled metallic mould into the liquid " gelatine or gelatinous composition ;" it is sealed by " dropping some melted gelatine into the orifice." " When using " a membraneous envelope, gut skin after being prepared by " cleansing and acids is stretched in a moistened condition " on an oiled bulb of glass or metal to form an envelope, " which is then filled with the medicine and tied in the " ordinary way."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1873, September 10.—No. 2970.

PHIPPS, Thomas Lovell.—Horse clipper.

The moveable plate has a slot therein which works on a rib in the fixed plate. A screw in this rib carries a spring which bears on the upper plate with an adjustable pressure. The moveable handle works the plate by a short arm engaging with a slot therein. The handles are secured as follows:— " On the under side of the head of the fixed handle are two " studs, which take into holes in the fixed cutter. The head " of the fixed handle is hollow or cut away, and the head of " the moveable handle or lever is passed under the hollow " head of the fixed handle. By passing a screwed pin " through holes in the said heads and fixed cutter, and screw- " ing a nut on or driving a cotter through its end, the said " two handles are securely connected to the fixed cutter, the " pin described constituting the axis on which the moveable " handle or lever turns." " The sides of the cut-away part " in the head of the fixed handle serve as stops to limit the " motion of the moveable handle."

"The rib-like projection passing through the fixed cutter " may be dispensed with, and instead thereof a slight recess " may be made in the same place, the screw on which the " spring is fitted standing in the middle of the said recess." The spring is then made so that " its middle portion is con- " cave, and its ends are convex." " The middle concave " portion" " enters the recess in the fixed cutter, and the " said spring is made thereby incapable of motion about the " screw as a centre." " The convex ends of the spring press " upon the moveable cutter, while the middle portions " " passing through the slot in the moveable cutter serve as " guides." " On the cutters, handles and spring may be con- " nected by a central pin." " The middle of the spring takes " into a recess in the under side of the fixed handle, and the " head of the said handle is expanded laterally on each side " of the centre, and each of the expanded parts carries on its " under side a stud, which studs pass through guiding slots " in the moveable cutter, and engage in holes in the fixed " cutter. A wedge-shaped cotter is passed through a cotter " hole in the pin," and by driving this to a greater or less distance the pressure on the spring is regulated. "Instead "of a spring a fixed bearing plate may be used, or the front "of the fixed handle may be used as a bearing plate. The "said bearing plate is fixed on the fore under side of the head "of the fixed handle, and bears direct on the moveable "cutter. The pressure is regulated by the cotter." "The "expanded part of the fixed handle acts as a case."

To lubricate the moving parts, wool, &c., charged with oil is placed in "corrugations on the inner opposed faces of the "cutters."

Coiled springs may be substituted for the "bow" springs. They are "placed around screw pins," which "pass through "the fixed cutter and cover or handle, and are fixed by screw "nuts."

The wooden handle screws upon the end of the metal part of the handle.

The clipper may have "a double cutting action, that is to "say, the top and bottom longitudinal edges of each cutter" "are provided with cutting teeth."

[*Printed*, 1*s*. 2*d*. *Drawing*.]

A.D. 1873, September 11.—No. 2980.

GEDGE, JOHN.—(*A communication from Reimer Zimmerman.*) —(*Provisional protection only.*)—"Instrument for clipping or "shearing animals."

The handles carrying the fixed and moving cutters are jointed at their hinder ends, and kept open by a spring. The moving cutter is a single blade. It works under a bridge which forces it down on the fixed comb. Upon it is pivoted a wedge piece, so formed that during the cut it passes under the bridge and wedges the blade down on the comb, but during the return motion it falls back and allows the cutter to traverse freely, without being acted on by the bridge.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1873, October 18.—No. 3380.

HYATT, THADDEUS.—"Plating iron," &c.

"These improvements consist in plating cast and wrought "iron with lead, and adapting and applying the lead plated

" metals to various new and useful purposes." Amongst these are mentioned " lead-plated horse-shoes to prevent the animals " from slipping," " the soft lead on the interior of the shoe " being less hurtful, and more accommodating to the hoof than iron." The iron, " galvanised " or not, is to be tinned " and plated with the lead."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1873, October 18.—No. 3385.

MENDEL, Sam.—Horse-shoes.

There is " a curved slot " through each " side of the shoe," and to this is fitted " a strip of vulcanized india-rubber or other " suitable yielding material with two projections on it, which " projections pass through the slots in the shoe and project " slightly beyond it; the ends of the strip and the part " between the two projections are held between the hoof and " the back of the shoe." The number of slots and of projections may be varied.

[*Printed*, 1*s*. *Drawings*.]

A.D. 1873, October 25.—No. 3467.

SELLMAN, Reed John.—(*Provisional protection only*.)—" Preparation for the cure or treatment of splints, spavins, curbs, " ring bones," &c.

Lotion composed of corrosive sublimate dissolved in alcohol. One ounce of alcohol, and half an ounce of corrosive sublimate are subjected to a low heat till the latter is dissolved.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1873, October 29.—No. 3516.

PLANT, William.—Horse clipper.

The fulcrum on which the two comb plates work is formed of " a pin screwed into the lower cutting plate, and having a " collar fitting close to the said cutting plate." " Or the " fulcrum may be formed of a pin shaped and fixed as in the " ordinary way and is preferable to the former described " fulcrum." Teeth on the end of the working lever fit into corresponding teeth cut in the edge of a slot in the moving plate, so that "the lever end operates on the teeth in the said " opening exactly as a toothed segment operates on a rack, " and thus the leverage is the same throughout the stroke." The other side of the slot is curved so that the end of the lever comes in contact therewith at the end of the stroke and " produces a dead lock or stop, thus preventing the blow from " being so severe on the bearings or guide pins." The lever is provided with a boss " at its under side where it works on " the fulcrum, so that the thrust on the fulcrum may be in " the same plane or largely in the same plane with the teeth " and curved part " of the slot.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1873, November 1.—No. 3556.

HUNT, Bristow.—(*A communication from Mather E. Hawes.*)—(*Provisional protection only.*)—Machinery for making horse-shoes.

" The improvements consist mainly in providing a horse-shoe " making machine with a transverse travelling feeder (sup- " plied with a proper bar holder) a longitudinal travelling " former, oscillating transverse formers, and a plunger die, " each connecting by suitable operating mechanical devices " respectively with a cam attached to and cams formed on a " driving shaft" "so that by the rotation of the said cam " driving shaft an automatic intermittent reciprocating move- " ment is imparted to the said feeder, travelling and oscillating " formers, and plunger die, by which a rolled bar at the proper " time and in a suitable manner is conveyed by the said feeder " through a cut off block to the longitudinal former, held, " borne down, and cut off by a bar holder and bar cutter levers " formed at the rear ends with rollers operated by a cam on " the rear of said travelling former, advanced, bent and " flanged between flanged rollers, and carried forward by the " longitudinal former, and shaped between the curved ends of " the oscillating formers, and grooved and punched with nail " holes beneath the plunger die, which on the return move- " ment is raised to release the shoe which in its finished " shape is carried back by the longitudinal former, knocked " off by a stem or other suitable knock off device on the bar

" holder lever, and dropped through an aperture formed in " the frame of the longitudinal former."

[*Printed, 4d. No Drawings.*]

A.D. 1873, November 6.—No. 3612.

ELLIOT, John Charles.—(*Provisional protection only.*)—Roughing horses.

Nails with suitably formed heads of steel or hardened metal are used. The heads are "by preference of a shape of a " pyramid or wedge of a cone with a rounded point." They are formed with "ridges or side projections, which fit in the " nail grooves or in other suitable recesses made in the under " surface or part of the shoes." The nails are driven by means of a suitably formed punch, to avoid injuring their heads.

[*Printed, 4d. No Drawings.*]

A.D. 1873, November 15.—No. 3723.

HOLYOAKE, William, and BROWN, Charles.—Horse clipper.

There is a cutter over the moving cutter made in one piece with the fixed handle or secured thereto. Studs on the under side of the cover pass through slots in the moveable cutter and enter holes in the fixed cutter. A stud at the middle of the rear edge of the cover fits in a notch in the rear edge of the fixed cutter. The cover, cutters and handles are all connected by a screw pin passing through them. The moveable handle and cutter are connected by a pin and slot. The cover is cut away to allow the action of the handle, and the ends of the cut away part serve as stops therefor.

Instead of the back stud above described a screw may be employed which by acting against the fixed cutter tilts up the back edge of the moveable cutter, and so presses the cutting edges together.

The cover may be secured by two screws passing through it and both cutters, and in this case the screw pin on which the handle works does not pass through the fixed cutter.

The moveable cutter may be " slit or divided near its middle " by two divisions," and the " divided part " " raised out of

" the plane of the parts on either side." A slot in this raised part receives the stud on the handle by which the cutter is operated.

[*Printed*, 1*s*. 2*d*. *Drawings*.]

A.D. 1873, November 18.—No. 3737.

HASELTINE, George.—(*A communication from the National Horse-nail Company, Incorporated.*)—"Machinery for finishing " horse-shoe nails."

The nails are fed to the machine by a feed screw which becomes coarser at the point where the nail reaches the punch " for the purpose of separating the nails." The screw has a longitudinal motion given to it by a cam " adjusted to counter- " act the advance of the threads by moving the shaft in the " opposite direction at an equal speed during the shearing of " the nail." The nail is operated upon by a " revolving " shearing die," or a " reciprocating shearing die " and a " shearing punch ;" both die and punch are set an angle corresponding with that of the screw thread. The next nail passes to a " milling cutter " acting against a die, and after this to " bevelling and hardening cylinders " by which it is rolled.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1873, November 20.—No. 3768.

GOULSTONE, Arthur John.—(*Provisional protection only.*)—Preserving agent, available also for treating scab, foot rot, &c.

The " antiseptic compound known as 'chloralum,' " described in No. 60, A.D. 1870, is employed for the purpose. The " preserving substance or compound is composed as " follows :—Creosote sp. g. 1·071, 3 ozs. ; rectified spirits. sp. " g. 0·838 ; magnesia carbonate, 1½ ozs. ; water 1 gallon (or " 160 ozs.) The above to be triturated and filtered so as to " render the creosote soluble. This mixture with chloralum " should be in the proportion of 1 per cent. of creosote and ½ " per cent. of tannin. The quantity of tannin to be employed " as an admixture with the above is 5 ozs. to one gallon of " water (or 160 ozs.) which should be filtered before applica- " tion. Glycerine 2 °/₀ mixed with chloralum at the sp. g. " 1150, with the addition of 10 per cent. of water (in case of

" bath); or the wash applied by sponge, brush or otherwise " to sheep infected with scab or other cutaneous diseases." "The application for foot rot to be made in the following " manner:—Chloralum in powder mixed with tallow, through " which the diseased sheep are driven, and to be repeated " twice, or according to circumstances."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1873, November 22.—No. 3824.

GARDNER, Henry.—Horse-shoes.

Grooves are cut in the wearing face of the shoe, diagonally across it. These grooves are dovetailed or so formed that studs may be slid into them and so held. The studs may be of metal, or metal or any other suitable material, as wood, leather, rubber, &c. and are intended to take the wear and prevent slipping. They are secured by screws, cotters, spring bolts fitting in slots in the studs, keys, nails, or otherwise.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1873, December 2.—No. 3951.

BOUTTIER, Léon, and COUHAULT, Mathurin Jean Baptiste.—" Shears or clips for shearing or clipping sheep."

The clipper consists of two comb-plates, the upper or movable plate having a smaller number of teeth than the lower or stationary one. The fixed plate is carried on one end of a bow spring which is secured to the fixed handle. The other end of the spring is attached to the moving plate. The moving handle is pivotted to the fixed plate, and also to a flat plate at the end of the spring to which the movable plate is attached. An adjustable pressure plate keeps the cutter down to its work. This plate is formed with a number of fingers corresponding to the teeth on the movable plate.

The invention may be modified by using a cutter with only a single blade working over a comb-plate, and dispensing with the pressure plate.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1873, December 20.—No. 4188.

YATES, Walter.—(*Provisional protection only.*)—Horse-shoes.

The shoe is secured by clamps instead of nails, and the heel and toe pieces are moveable. The rim of the shoe is of "wrought or malleable cast iron, with (say) four pairs of "light snugs to act as bearings for the clamps on the outer "edge of its upper side. Between each pair of these a clamp "works on a pivot having its lower outer edge bevilled off so "as to easily swing backwards, but the inner one left square" The clamps clip the hoof tightly and have spikes to hold in the hoof. A hole is drilled "across the rim below the snugs, and "on turning a screw which passes through this a small nut "is brought against the inner edge of the clamp (left square "as before mentioned)." "To prevent this nut turning round "it works in a square slot in the rim of the shoe."

[*Printed,* 4*d.* *No Drawings.*]

A.D. 1873, December 23.—No. 4210.

LAKE, William Robert.—(*A communication from the* "*Rhode* "*Island Horseshoe Company* (*incorporated*).")—Machinery for making horse-shoes.

1. "Swaging the ends of bar blanks and bending such "blanks into the form of shoes." "Two swages are arranged "in suitable guides to have a reciprocating sliding movement "over the surface of a platform." They are operated by eccentrics and "act in combination with adjustable blocks "clamped to the said platform to swage the bar blank which "has been previously cut to the right length, creased and "placed in position in the machine in readiness to be operated "upon. The said eccentrics are set a very little out of coin- "cidence in action, so that one will commence to act just as "the other has completed its work. So soon as the swages "have done their work they commence to retreat and a "sliding pattern block which also forms a bender advances, "the same being attached to a bar fitted to suitable guides. "This sliding bar also carries a transverse bar furnished with "inclined faces which during the forward movement of such "bar impinge against friction rollers in the ends of levers and "cause such levers to move outward, whereby bending

" rollers on their opposite ends are made to approach each " other and act to complete the bending of the bar at the " heels close to the pattern block. The said levers are located " underneath the platform of the table, and the bending " rollers are set on studs which project above the top surface " of the table through curved slots cut therein." To allow blanks of different lengths to be placed accurately in the machine, a spring guide is used, in which the springs are " compressed equally, and the bar will be centralized."

2. "Holding the horse-shoe blank upon the bed during the " operation of 'plating' out the toe," &c. A series of "re- " volving hammers" is employed in "combination with a " reciprocating bed supporting an anvil die arranged to slide " to and fro underneath revolving hammers." The shoe is held by a presser bar the other end of which carries a friction wheel running on a raised track. The slow motion of the bed under the hammers, and the quick return motion, are obtained by separate cams. To discharge the finished shoe, there is employed "a drag keyed to a shaft which has bearings in ears " projecting from standards wherein the revolving shaft of the " hammers is mounted." The drag is kept down by a weight so that it allows the shoe to pass under it in one direction, but " it will drop in rear of the toe and act when the bed returns " to strip the shoe from the anvil, and discharge it from the " machine."

[*Printed*, 10*d*. *Drawing*.]

A.D. 1873, December 29.—No. 4265.

HUGHES, Edward Thomas.—(*A communication from Edwin Saxton Wheeler.*)—"Horse-shoe machines."

A pair of saddles are reciprocated vertically by means of cranks, the connecting rods of which are adjustable as to length by means of thimbles working with right and left hand screws; these saddles carry former rolls which are guided in their travel by cams and are thereby carried round a horizontal mandrel so as to form the shoe out of a blank placed in position. The blanks are rolled in a bar, and have a central guide notch rolled on them, the bar is placed in the machine, and the end trimmed off by a reciprocating knife. A second knife cuts the blank from the bar. The blank "is then squeezed " upon its ends" by spurs upon the " saddle bars."

The saddles then rise, forcing the blank against the mandrel, and shaping the shoe. The finished shoe is removed from the mandrel by a lever, and dropped upon an endless band, by which it is conveyed away.

[*Printed*, 1*s*. *Drawings.*]

A.D. 1873, December 31.—No. 4290.

HUNT, Bristow.—(*A communication from Alvaro Francisco Carlos Reynoso.*)—" Nutritive hygienic compounds."

These are available either for men or for animals. They consist of various preparations of "lacto phosphate of lime," "fluoride of potassium," "ammoniacal citrate of iron," "citrate of manganese," "citrate of potash," "powdered " bone," &c. They are made up as syrups, lozenges, &c.

[*Printed*, 4*d*. *No Drawings.*]

1874.

A.D. 1874, January 3.—No. 46.

LANCASTER, John.—Horse-shoes.

1. Blocks of wood are wedged into a groove formed in the shoe, and into these blocks are fixed " nails, studs or strips of " iron or steel." Blocks of india-rubber are also wedged in the groove.

2. An "artificial frog" "of wood with a leather under " surface," &c. is fitted to the shoe. " The ends of the shoe " are formed with a projecting web or seat which is wedge " shape to receive the artificial frog." "The frog being " slipped into this seat is further secured there by a pin passing through the seat and the face of the frog."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1874, January 13.—No. 169.

NORMAN, John.—Horse-clipper.

Improvements on No. 135, A.D. 1873.

A moveable comb plate slides over a fixed plate, being guided by slots, and worked by a projection from the moveable handle engaging in a slot in the plate. To keep the two plates together, a cross bar fits over the upper plate, and is held by screws or bolts passing through the guide slots in the upper plate and fixed to the lower plate. A screw in this bar bears upon the upper plate, and keeps it down.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1874, January 13.—No. 170.

TURNBULL, Samuel.—(*Provisional protection only*.)—Horse-shoes.

" The shoe is made with prongs near the heel or in other " position, which prongs enclose bevelled slots, into which " small blocks of felt are forced, the felt being securely held " therein owing to the dovetailed form of the slot." The object of the invention is to give foot-hold on slippery surfaces.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1874, January 17.—No. 221.

LE BACQ, François.—(*Provisional protection only*.)—" Anti- " slippery horse-shoe."

" Small grains (pegs) of steel are introduced in the horse- " shoe in small holes." The pegs may be of any shape preferred. They " are not screwed in the horse-shoe, but " worked in the iron by means of pressure."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1874, February 19.—No. 625.

ARIS, John Jordan.—Horse-shoes.

A number of grooves are formed on the tread surface of the shoe " in a position inclining forward so that the sides or " edges of all of them form the same angle with the centre " line."

There is " an angular groove or recess or 'fullering,' " round the edge of the bottom of the shoe." This " fuller- " ing " is " curved at the toe of the shoe with a curvature " the reverse of that of the shoe itself, and having the vertical " edge at the front of the shoe."

[*Printed*, 10*d*. *Drawings*.]

A.D. 1874, February 25.—No. 715.

BOWN, William.—Horse clipper.

Slots in the upper moveable comb plates receive guide pins which "project from the inner face of a **T** piece or clamping "bar" secured to the fixed plate by a bolt and nut or a thumbscrew. A stud "projecting inwards from the tail "end of the **T** piece" passes through the head of the moveable handle and the fixed plate, thus forming a fulcrum for the handle.

A number of slots may be formed in the fixed plate. These slots have bevelled edges to prevent them from collecting dirt and facilitate the discharge of hair, &c.

Instead of a fulcrum pin, the head of the moveable handle may be formed with a boss which fits into a "circular "countersunk recess" in the fixed plate or the fixed handle.

[*Printed*, 1*s*. *Drawing.*]

A.D. 1874, March 10.—No. 861.

HENDERSON, Arthur Charles.—(*A communication from Amand Etienne Picot.*)—Sheep shears.

The shears are formed with a bow handle, hinged at the bow. The two parts are kept open by a pair of springs, one on each part, pressing together, or by a single spring. One half of the bow handle carries a comb-plate with three blades thereon, the other carrying a similar plate with two blades. Slots on one plate engage with pins on the other to act as guides, and stops are arranged to limit the travel of the blades over one another. The blades are separate, and are secured to the plates by screws.

[*Printed*, 8*d*. *Drawing.*]

A.D. 1874, March 10.—No. 867.

HUNT, Bristow.—(*A communication from Pierre Michel Sibut, ainé.*)—"Channelled or honeycombed iron applicable for horse-"shoes and for other purposes."

Iron is rolled or stamped with grooves, depressions or hollows of any suitable shape. It is intended to be made into horse-shoes, so that the roughened side may be next the ground and may prevent the horse slipping.

The sheet of drawings attached to the Specification shows a number of patterns with which the iron may be stamped.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1874, March 20.—No. 987.

THUILLARD, Alexandre.—Horse-shoes.

The invention "consists in substituting for the ordinary " calkins successive notches or recesses and projections not " passing beyond the thickness of the shoe."

[*Printed*, 1*s*. *Drawings*.]

A.D. 1874, March 26.—No. 1054.

HASELTINE, George.—(*A communication from David Brown and James Fulton*.)—Sheep-shears.

The blades are made separate from the handles and each is attached by a couple of screws to a flat piece formed on the handle. By making one of the holes as a slot, a slight adjustment of the blades is provided.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1874, April 11.—No. 1258.

FRYER, John Cornelius, and HODGSON, Nathan.—(*Provisional protection only*.)—Horse-shoes.

"This invention consists of three plates resting upon the " surface of an ordinary shoe which are connected by an " inner band or rim, which rim fits the inner circle of the " shoe. The said plates are constructed to clip the outer as " well as the inner rim of the shoe."

"In lieu of having the above-named plates attached to an " inner band," they may be placed "separately upon the " shoe, fixing in each case by means of a self-drilling steel " set screw, which passes through the inner clip of the plate " into the inner rim of the ordinary horse-shoe." "The " point of this screw is so formed, being self-acting, that it " drills or perforates the shoe." "Upon the surface of the " above-named plates in each case" is screwed " an iron boss " or nut" "which may be roughened or plain." "These " bosses or nuts can be renewed as often as required, a slot

" being formed in the bottom part of the screw for its removal " when the head is worn down."

[*Printed, 4d. No Drawings.*]

A.D. 1874, April 15.—No. 1293.

IVORY, James Harcourt.—(*Provisional protection only.*)—Horse-shoes.

The shoe is " cast in malleable iron." The toe of the shoe is "made wider than in the common article, and this wide " part is hollowed out for the reception of a packing of fibrous " material, which packing prevents slipping." The shoe is " made solid, but is tapered down towards the extremities." It " is furnished with a clip at the toe " " and holds for the " nails."

[*Printed, 4d. No Drawings.*]

A.D. 1874, April 15.—No. 1299.

TONGUE, John Garrett.—(*A communication from Dexter Curtis and Henry Gilman.*)—(*Provisional protection only.*)—"Lining for horse collars, saddles," &c.

The object of the invention is to prevent the saddle or harness galling the horse, " and to heal the flesh when galled " or chaffed." The invention consists " in the application of " an imperforate sheet lead lining to such parts of the harness " as produce or are liable to produce the gall or chaff."

[*Printed, 4d. No Drawings.*]

A.D. 1874, May 7.—No. 1609.

COURTOIS, Charles.—" Apparatus for clipping or shearing " animals."

The apparatus consists of a number of scissor-like blades operated simultaneously. Two forms are described.

1. The blades are jointed to a thin plate, two of them centrally and the other two one on each side of the central line. There is also a central fixed blade. The blades are connected together by pins on the outer pair passing through slots in the plate and engaging with hooks on the inner pair. The ends of a spring bow handle terminate in slotted pieces

passing over pins on the outer blade. The bow is secured to a stem projecting back from the plate. The effect of the arrangement is that by pressure on the bow all the blades are closed together, while the reaction of the bow opens them. To sharpen the blades the pins are pressed out of the slots, when the bow causes them to spring open.

2. All the blades are pivoted on a common axis, and connected together by pins and slots on alternate blades. They are opened by a coiled spring on the axis.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1874, May 9.—No. 1653.

STEERS, Robert, and DRUCE, George Frederick.—(*Provisional protection only*.)—Horse-shoes.

The shoes are made of leather or gutta percha, or of a "compound of gutta-percha and sand, grit, gravel, granite, "Derbyshire spar, emery," &c. They are formed "by "cutting, stamping, punching, moulding" or otherwise. They may be attached to the hoof by countersunk nails or by "any suitable adhesive compound."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1874, May 20.—No. 1794.

BAKER, John Morcombe Bromley.—"Material for the manu- "facture of horse-shoes," &c.

Metal turnings are mixed with melted gutta-percha, and the compound run into moulds. The proportions may be "three parts of plastic material and five parts (by weight) "of iron borings or turnings." Granulated cork or cork shavings may be added to the mixture. The shoes may be attached to the feet by a solution of gutta-percha in bisulphide of carbon.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1874, June 5.—No. 1954.

LYON, William Penman.—"Applying magnetism for curative "and other purposes."

The invention consists in combining magnets with a textile fabric which is used for various purposes for clothing for men and animals. Magnetised beads, tubes, or wires are incorporated with the fabric by being strung on the threads of which it is composed or otherwise. The magnets may be so arranged as to surround any affected part, so that they "unite " in concentrating their magnetic action directly on to such " a spot."

[*Printed, 4d. No Drawings.*]

A.D. 1874, June 16.—No. 2094.

JOHNSON, William.—Making edge tools from Bessemer or Siemens-Martin steel.

Sheep-shears are among the articles named. They are made from the above-named metal, heated to a white heat and plunged into a paste composed as follows:—3¾ oz. powdered charcoal, 4½ oz. gum sandarach, 50 grains of prussiate of potash, 45 grains of sal ammoniac. "The effect of this is " an immediate conversion of the articles into good cast " steel."

[*Printed, 4d. No Drawings.*]

A.D. 1874, June 17.—No. 2114.

HOLLAND, Alfred.—(*Provisional protection only.*)—" Shear- " ing and clipping apparatus."

To prevent friction a pair of small rollers are mounted in slots in the cap, "the rollers projecting below the under side of " the cap sufficiently to touch the face of the top cutting plate, " and rotating with the to-and-fro action of the top cutting " plate and cap," or loose rollers may be set in countersunk grooves in the cap and top plate. There may also be " side " friction rollers held in the usual stops of the cap." The inventor proposes to " secure and set up the apparatus by a moveable " screw pin with a thumb piece for adjustment, the pin " passing through all the parts and arranged near the top of " the cap centrally between the two rollers." The shaft of the handle and the cap are in one piece " to which the lever " is secured by a countersunk screw passing through both " parts, and which is fastened permanently by a slot burr or " nut upon the top."

[*Printed, 4d. No Drawings.*]

A.D. 1874, June 25.—No. 2208.

McDOUGALL, Alexander.—Insect destroyer.

Two of the compositions described are to be used for destroying insects on sheep, &c., and preventing insects attacking sheep, &c.

1. The composition described in No. 2510, A.D. 1860, is mixed with sulphur and a liquid obtained by "washing the "oil produced between the spirit or naphtha and the pitch in "the destructive distillation of carbonaceous substances "with an alkali." The proportions are:—4 parts composition, two parts sulphur, and one part liquid.

2. Carbolic acid, treated as described in No. 2510, A.D. 1860, is mixed with sulphur in the proportion of 3 parts acid to 2 parts sulphur.

[*Printed, 4d. No Drawings.*]

A.D. 1874, June 27.—No. 2236.

MARTIN, Albert. — (*Provisional protection only.*) — Horse clipper.

The teeth in one of the cutter plates are made "so deep "that they may have considerable elasticity and so that they "extend considerably beyond the roots of the teeth of the "other cutter plate." A "cover plate" is employed, the edge of which is caused "to press upon the teeth themselves at "some distance from their roots."

[*Printed, 4d. No Drawings.*]

A.D. 1874, June 30.—No. 2266.

HORSFALL, William, and GREENWOOD, Arthur.—Horseshoes and machinery for making the same.

Bar iron of suitable section is cut by a shearing machine into lengths sufficient to make two shoes. These lengths are fed into a machine by which they are bent, so that by cutting the bent blank into two, the shoes are produced. This is effected by a pair of spring levers, between which the blank is traversed by a table carrying a mandrel of suitable shape. The blank is passed twice through the machine, first one end being bent, and then the other. The blank is then cut in two and each separate blank thus formed is submitted to a pair of shaping dies. The "spruns" are then inserted. These are made separately, and have each a pair of "fangs." "The "sprun is placed in a cold state with its fangs upwards in a "die suitably recessed to receive it, and otherwise shaped to "receive the horse-shoe blank which is placed in the die in a "red hot state;" the "sprun" is thus fixed in the shoe. "On "reheating the shoe blank and subjecting it to pressure in "suitable dies the welding of the sprun thereto will be "effected." The nail-holes and grooves are formed by a special apparatus. The lower die is mounted on a base block carried by a coiled spring. Fixed punches mounted in the base block project up through holes in the die, which is lifted up clear of the punches by the action of the spring. When the upper die is brought down it depresses the lower die, and the punches, passing through the holes therein, are driven through the shoe, and form the nail holes. The dies are suitably formed to produce the grooves required in the shoe.

In the bending machine above described, the clutch used for throwing the bending mechanism in and out of gear is the same as one described in a former Specification, No. 2282, A.D. 1869.

[*Printed,* 1*s.* 4*d.* *Drawings.*]

A.D. 1874, July 1.—No. 2281.

MACKLEY, George Thomas.—(*Provisional protection only.*)— "Horse and tip nails."

Such nails are made of "cast iron which is rendered malle-"able by the admixture of various irons in suitable propor-"tions." The proportions may be one third "white iron" to two thirds of "the iron known as No. 5 hematite alone, or "with No. 4 hematite." The nails are cast "in a suitable "mould made for the purpose."

[*Printed,* 4*d.* *No Drawings.*]

A.D. 1874, July 7.—No. 2373.

CLARK, William.—Horse clipper.

Improvements on No. 1228, A.D. 1873.

1. A double spring is used to open the handles. One part of the spring is secured to each handle and the two parts are

hinged together. The connexion to the handles is made by slots and screws, so as to give a power of adjustment.

2. There is a "compensating spring or cushion placed in "the recess of the cutter plate between its edges and the "stud giving it motion through the medium of the handles." Or "the short lower lever giving motion to the cutter blade" may consist of a "blade spring" sufficiently stout to give motion to the cutters but capable of yielding to any obstruction.

[*Printed*, 8*d*. *Drawing.*]

A.D. 1874, July 15.—No. 2475.

HASELTINE, GEORGE.—(*A communication from Gerard Dunning and Charles B. George.*)—Horse-shoes.

On the under side of the shoe are a "series of side calks "each of which is convex on the outside and concave on the "inside." "Between these side calks are deep recesses." A space is left "between the several calks to receive the nails." The toe calk is of the usual shape. The heel calk "is grooved "out or cut away on the top furnishing two bearings for "each calk." The shoe may be cast from steel or otherwise made.

[*Printed*, 6*d*. *Drawing.*]

A.D. 1874, July 17.—No. 2509.

YATES, WALTER EDWARD.—Horse-shoes.

Horse-shoes are made "entirely or partially from untanned "animal hide, such for example as the material well known "as buffalo hide." A strip of hide is folded into a sufficient thickness and the folds secured by sewing, riveting, cementing, &c. They are then squeezed between dies. They may be treated with oil or other liquid to render them impervious to moisture.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1874, July 20.—No. 2538.

MARTIN, ALBERT.—"Clipping or shearing animals."

Improvements on No. 2236 A.D. 1874.

The cover plate is slotted out so that it forms "a number

" of separate springs." The back edge is bent and rests on the lower cutter plate. The moveable handle works on a pin screwed into the fixed handle and a pin in the upper cutter plate engages in a slot in the moveable handle. Or "the upper lever handle works directly upon " the bottom plate, whilst the lower handle is forked and is " fastened to the bottom plate at its two sides." The cover plates, instead of bearing direct on the cutter, may have a spring and a piece of elastic material between it and the cutter. The handles may be formed like scissor handles or may have wooden handles fixed thereon. The handles may be opened by a spring, fixed to one handle and to a link jointed to the other. The guides may be square blocks fitted over the screws holding the plates together. In a form of the apparatus adapted for shearing sheep, the teeth of the lower cutter are larger than those of the upper cutter, and the latter has only a short traverse. "The upper surface of each of the teeth of the bottom cutter is hollowed out in the centre."

In the lower cutter "the fore part of each tooth is bevilled " off on the under side."

The upper cutter "is as heretofore of a curved form." " the rear portions of the teeth of the cutter being ground " away on the under side." "A pin carried by the end of " the lever enters a block" "received into a recess in the " back of the cutter plate" to give motion thereto.

[*Printed*, 1s. *Drawing*.]

A.D. 1874, July 28.—No. 2635.

MARTIN, Robert.—Horse clipper.

The top cutting plate is formed with two apertures or gaps at the back "instead of one only, the right hand aperture " being for the end of the moveable lever to work in, and " the other for the end of the fixed handle to lie in, suffi- " cient play being left between the end of the handle and " the sides of this aperture to allow of the requisite amount " of movement being given to the upper cutter." Instead of the lever handle working loose on a pin, it has a pin fixed in it, which works in holes in the bottom plate and in the cover plate. The cover plate is held by screws passing through the guide slots in the upper cutter, and by the screw which secures the fixed handle.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1874, August 4.—No. 2695.

MARSDEN, Robert.—(*Provisional protection only.*)—Horseshoes.

A bar of iron or steel has one or two grooves rolled in it. The bar is then passed through rollers "so formed as to close "the groove or grooves on the upper or open surface" and they thus "become slightly narrower on the top or open side "than at the bottom." "When the shoe is in wear gravel or "dirt will accumulate in the groove and become very hard, "and it will remain in the groove till the shoe is worn out."

The bar formed as above is cut into suitable lengths which are bent to the required form and have the holes punched.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1874, August 10.—No. 2764.

COUHAULT, Mathurin Jean Baptiste.—Horse clipper.

The presser plate is fixed, and serves as a guide for the moveable comb-plate. The lower plate is fixed to the fixed handle. The presser plate is also secured to the handle by screws, by means of which the pressure is regulated. The moveable arm is pivoted to the fixed arm, and has a stud on it engaging in a slot in the moveable comb-plate. Slots in the latter also work over studs in the fixed plate.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1874, August 26.—No. 2916.

MILLER, George, and RAINE, Benjamin Wilson.—"Rol-"ling bars for the manufacture of shoes for horses."

In the lower roll is formed "a groove to the form or section "of the under side of the iron required," and on the upper roll is fitted "a hoop or ring of steel or other hard metal" which is turned down "until its outer circumference is of "such a length that one revolution of the rolls will impress "exactly or almost exactly so much of the bar as will make "one two three or more shoes," the face of the "ring or

" hoop " being so shaped " as to form the upper surface of " the bar to the section required." The bar may be bevilled on both sufaces or on one surface only. " Those parts of the " bar intended for the heels and toes of the shoes are left " solid, the toe parts being made a little thicker than the heels " if necessary. The remaining parts of the bar are fullered " or grooved by a tongue formed on or attached to and pro- " jecting from the surface of the hoop or ring." The bars are rolled at one heat. The upper roll may also be solid instead of being formed as above.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1874, August 28.—No. 2945.

MACINTOSH, John.—Hardening glass, &c.

Improvements on No. 1714, A.D. 1874.

In the present Specification it is stated that the process is applicable to the tread surfaces of horse-shoes. It consists in chilling the surfaces of castings by applying freezing mixtures to the moulds. The surface is chilled " by suddenly " abstracting the heat in moulds filled with powdered soap- " stône or plumbago, reduced to extreme cold by passing " iced water and salt under the mould."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1874, September 3.—No. 3024.

BOSSERT, Albert.—(*A communication from Paul Holder and Albert Stolz.*)—(*Provisional protection only.*)—Sheep shears.

A " two-edged knife blade of lancet form " is mounted upon " one of a pair of shear arms," while the other carries a comb-plate. The cutter is kept down on the comb by a spring and a bridge piece.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1874, September 17.—No. 3184.

SWAINSON, George Frederick, and DOVER, George.—(*Provisional protection only.*) — " Roughing pieces for horse- " shoes."

" The shoe has dove-tailed mortices cut out from the solid " metal " and " also made taper, the widest part being on the

" outside of the shoe." These mortices are arranged radially. The "roughing pieces" are made of corresponding shape. They "are driven home into the mortices aforesaid, and owing " to their taper shape will not be liable to come out." They are of tempered steel.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1874, September 28.—No. 3321.

COOKE, Robert Fulton.—Horse-shoes.

The shoes are made of iron and india-rubber, the rubber being cast or otherwise secured in a skeleton frame of iron, which is secured to the foot by nails in the ordinary way. The frame may be modified in shape. It is formed with "hubs" to receive the nails. The recesses which contain the rubber are formed so as to hold it secure when it is cast therein. The rubber is vulcanized in its place in the shoe. Nails may pass through the rubber or not..

[*Printed*, 8*d*. *Drawing*.]

A.D. 1874, October 3.—No. 3377.

HUNT, Bristow.—(*A communication from Alvaro Francisco Carlos Reynoso.*)—" Purification of air."

The air is purified mechanically and chemically by forcing through filtering media and through or among substances "intended to destroy or fix the germs," and to purify the air. This is to be effected by any suitable apparatus. The air is then to be supplied to "men or animals." To "verify the " purity of the air with regard to organic germs" "solutions " are employed capable of developing the germs held in " suspension in the air."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1874, October 24.—No. 3680.

BRAZENOR, Thomas.—(*Provisional protection only.*)—Horse-shoes.

The shoes are "frost shoes" and are provided on the tread surface with spikes. The shoe is hinged at the toe and the heels can be drawn together by a right and left handed screw working in snugs in the heels, thus causing clips on the upper side of the shoe to clip the ordinary fixed shoe and so retain the frost shoe in place.

[*Printed, 4d. No Drawings.*]

A.D. 1874, October 31.—No. 3764.

WOOLHOUSE, Henry.—Sheep shears.

"The shears are made of iron cast in two halves." At the end of each handle is a boss, and the parts are united by a pin passing through the bosses. A spring between the two handles holds them open. A shoulder at the end of the handle by the boss prevents the blades opening too widely, and stops are formed on the "heels" of the blades, to prevent the points overlapping.

The blades may also be made separate, and of steel, the handle being of brass or iron. In place of the bosses, the handles may then be connected by a bow spring. A second spring may also be used in this case.

[*Printed, 8d. Drawing.*]

A.D. 1874, November 6.—No. 3834.

MONKS, John.—Shaving appliance.

The apparatus may be used for "removing hair or other " matters from the bodies of animals."

"The cutting blade is carried in a frame," and "is kept in " its place by a spring clasp" or otherwise. This frame is fixed to a plate or frame at right angles thereto which serves as a handle. "On and free to move over this plate or frame " in guides provided for the purpose there is a guard plate " terminating at one end in rake-like projections or forks, " which can be brought close up to the edge of the cutting " blade, or be removed from it, as required." "This guard " plate can be removed from the plate along which it slides."

[*Printed, 8d. Drawing.*]

A.D. 1874, November 27.—No. 4067.

PURDIE, Peter.—Nails.

Amongst the nails referred to horse nails are mentioned. The nails are "of a taper form and triangular in section," The machinery for making them "consists of revolving dies

" or wheels, in the periphery of the upper one of which taper " triangular recesses are cut in alternate directions." By this means the nails are rolled out of a bar. Instead of the " revolving die or wheel" " a flat vertically operating die or " stamp" may be employed. To form the heads there may be recesses in the "die or wheel" or the heads may be otherwise formed.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1874, December 3.—No. 4159.

SMALL, James Henry.—" Brushing, combing, and clipping " machine."

Improvements on No. 27. A.D. 1873.

A machine for grooming horses is described. Motion is given to an articulated shaft contained in a sleeve suspended "in " suitable hangers." On the end of this shaft is a cylindrical bursh. Various other appliances may also be attached, including " a shearing or cutting device." " These tools can be affixed " to the shaft by a bayonet clutch, or other convenient fasten- " ing." The articulations of the shaft are made by bevel wheels, or preferably by the inventor's " globe gear or universal " joint" consisting of hemispherical spur wheels.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1874, December 3.—No. 4161.

HUGGETT, John Albert.—Horse-shoe nails.

The nails are made from Bessemer or Siemens-Martin steel. The bar is rolled "of a section corresponding in form to two " horse nails placed point to point, so that there are flanges " or ribs on the edges of the bar corresponding to the heads " of the nails." The bar is cut up by two pairs of shears, to which it is submitted alternately. One pair cuts off two nails, and the other cuts off a waste piece.

A machine for the purpose is described. Two vertical slides, actuated by an eccentric on the main shaft, carry each a cutter on its lower end, acting against a fixed cutter below. In front of these is a "trough" which carries the bar to be fed to the cutters. This trough is mounted so that it can slide sideways, and it is reciprocated to and fro' by connecting rods from a shaft underneath. By this means the bar is presented to each pair of shears alternately. Spring stops, on either side of the trough are arranged to receive the shock therefrom. The bar is fed forward by means of a screw, which is thrown out of gear when the end of the rod comes up to the shears, to prevent injury to the carrier. Spring presser plates are arranged beside the shears to hold the bar while it is being cut, and the piece cut off. The nail blanks fall from one pair of shears into one receptacle, and the wasters into another, whence they are taken and remelted.

[*Printed*, 1*s*. 10*d*. *Drawings*.]

A.D. 1874, December 28.—No. 4457.

WING, David.—(*Provisional protection only*.)—Horse-shoes.

No nails are used to secure the shoe. The shoe is made with "a rim forming a 'continuous clip' which embraces "the hoof; the metal being of L form in cross sec-"tion." The shoe is jointed "either at the 'toe' or on "either 'quarter.'" It is "fastened by a key or wedge "fitted to slide in slightly dovetailed mortices made across "the shoe near the heel." The wedge may be secured by a split key, a nut, riveting, &c. The shoe may also be secured by means of a "link pivoted to the heel of the shoe at one "side locking into the other side when closed and secured by "a pin or otherwise." There may be a "section of india-"rubber between the shoe and hoof." Detachable calks may "also be secured to the shoe, or an additional wearing sur-"face may be screwed or otherwise attached to the said "shoe."

[*Printed*, 4*d*. *No Drawings*.]

1875.

A.D. 1875, January 5.—No. 48.

LAKE, William Robert. — (*A communication from Jacob Russell*.)—"Machinery for making horse-shoes."

The bar is rolled in a machine which marks the lengths of the blanks, &c. Before being submitted to the action of the machine described it is fed into this by a double pall arrangement, one pair of palls advancing the bar the distance required, and the other part holding it and preventing its withdrawal. By these it is submitted to the action of a pair of shears, one jaw of which is stationary and the other is moved by a cam. "On " each side of the cutting edges of the shears a broad level " surface is formed for the purpose of squeezing or upsetting " the ends of the metal during the act of cutting off the " lengths for the horse-shoes."

"Three disc rollers," termed "the first, second, and third " rollers" are mounted on horizontal shafts so geared together that the first and second "work upon one another " first" "and then" the second and third "work upon one " another." Male dies are mounted on the first roller and female dies in the second. In each male dies there slides a "former" or mandrel which is operated by jointed levers mounted in a slot in the roller and forced forward by a fixed cam surface against which they are carried by the revolution of the roller. Other levers carrying rollers on their ends are caused by suitable cams to bend the blank round the mandrel. The effect of the arrangement is that the blank is bent round the mandrel and then squeezed between the dies on the rollers. The female dies carried by the second roller are opened and closed by means of cams and springs, or by a double set of cams. The dies are held closed while the shoe is being acted on, and open to discharge it. The third roller carries a second set of male dies by the action of which the shoe is finished.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1875, January 16.—No. 176.

LONGSDON, David, and TOPPIN, Percy.—Horse-shoes.

The shoe is formed with "pads or projecting pieces," the inner "sides of which are made convex in opposite directions " and form mortices or recesses." Into these are fitted studs of corresponding shape which are secured by screws passing through holes therein into the body of the shoe. The studs may be of various shapes. The mortices may be in any direction.

Or slots may be cut in the shoe, "partially or completely "through its thickness;" studs are formed with tongues fitting these slots. Each stud is held by a pin or screw "passed either from the outside or the inside through the "thickness of the shoe and through the tongue." The "clips" may be separate from the shoe, and may be secured by screws or otherwise. They may "form part of or be "attached to the studs." The studs may be case-hardened, chilled, or tempered.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1875, February 4.—No. 416.

CHAQUETTE, Ephraiem.—"Machine for holding, turning, "and shearing sheep."

An endless band is mounted on rollers in a frame; on each side of the band is a casting carrying a pair of clamps. These castings are so mounted as to be capable of receiving a slow rotary motion by means of bevel gearing from a shaft under the frame. The sheep is placed on the endless band and its feet secured by the clamps, the rotary movement gradually turns it over while it is being shorn, and the fleece is left on the band, to which the motion of the sheep's body also gives motion. The fleece is thus carried along and deposited on the ground. The shearing is effected by shears operated automatically from the gearing which drives the turning apparatus. A standard on the top of the frame has pivoted thereto a horizontal arm, which supports a shaft driven from a vertical shaft within the standard, by means of bevel gearing, so that the shaft with the arm can be moved up and down on the pivots without ceasing to be driven. This shaft by bevel gearing drives a shaft hung from the end of the arm; on the hanging shaft is a joint, so that its end, which operates the shears, can be turned into any position. The shears consist of a pair of cutters pivoted together, and working one over the other. They are mounted in a flat case, at the end of which is a handle for guiding the shears. The lower cutting blade is made "with two prongs in the

" form of a **V**;" the upper cutter is "two-edged." The cutters are "operated by separate cams inside of the flat case."

An arrangement is also described, intended "to operate " a pair of ordinary shears by power applied to a shaft." In this a vertical shaft carries on it an elliptical cam against the edges of which a pair of levers fitted with friction rollers are arranged to bear. A clamp is fitted on the end of each lever, and a pair of shears are placed with one handle in each clamp. The whole arrangement is mounted in a case.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1875, February 4.—No. 421.

ADIE, Patrick. — (*Provisional protection only.*) — Horse-clipper.

Improvements on No. 2796, A.D. 1866.

The invention "consists in the application of a check stud " placed in any convenient position on the plates, the check " stud being fixed rigidly in one plate, and working through " a slot in the other for the purpose of taking off or relieving " the strain caused by the oscillating motion of the one plate " on the other from the studs or screws which hold the two " plates in contact."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1875, February 5.—No. 436.

PUENTE, Salustiano.—Sheep shears.

The object of the invention is to prevent the shears from cutting the skin of the sheep. The blade may be of "greater " thickness towards the cutting edges," or may have a rib formed on it, or a guard may be secured thereto by screws and slots so as to allow of adjustment.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1875, February 10.—No. 489.

HEARD, John Reed.—"Horse-shoe and other nails."

The plate is first hot rolled with transverse ridges to form the heads. It is then cold rolled with transverse grooves to form the points. By this means the metal near the grooves " is compressed and hardened so as to receive the " proper strength and hardness necessary for the point of " the nail." From the plates thus prepared the nails are punched. The plates may be rolled with ridges on both sides so that the nails may be punched out without leaving any waste metal between them, while yet sufficient metal is provided for the head, which is finished by stamping.

[*Printed, 6d. Drawing.*]

A.D. 1875, March 11.—No. 903.

McLEOD, Frederick Hicks. — Composition for destroying vermin in sheep, &c.

The following is the composition or dip :—21 parts by weight tallow "or other fatty or saponifiable substance," 24 parts " light tar oil," 10 parts "yellow tar oil," 29 parts "alkaline " lye, caustic soda, or caustic potash of 40° Twaddle," 8 parts " rozin," 5 parts carbolic acid, and 3 parts cresylic acid.

The tallow, &c. is boiled with the caustic alkali, and the tar oils "at the same time introduced." The acids are then added. "In preparing the "compound dip or wash for " summer use" it is preferred to add a tenth part of arsenious acid.

The composition "protects such animals" (as sheep, &c.) from "scab and other skin diseases," and "keeps them in a " sound and healthy condition."

[*Printed, 4d. No Drawings.*]

A.D. 1875, March 25.—No. 1101.

FLOWER, Robert.—(*Provisional protection only.*)—Shearing sheep, &c.

The shearing apparatus is worked by steam, compressed air, &c.

"The apparatus consists of a small cylinder fitted with a " long piston, which for parts of its length, and at or about " the middle of its length, is cut or notched out, so as to " have a face formed on which the slide valve works. Ports " are formed therein for admitting the compressed fluid to " each end of the piston and for passing off the exhaust. " The slide valve is worked by a rod or tappets, which at

" or towards the end of each stroke come in contact with " the cylinder ends or with any other part of same. The " piston rod passes out fluid tight at the front end, and has " a pin which works in a slot formed in the crank end " of the moving cutter or cutters, the stationary blade or " body of the shears being fastened to the cylinder." The apparatus is connected by a pipe to an air compressing apparatus or a reservoir filled with compressed air, or a steam boiler, &c.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1875, April 3.—No. 1206.

WOLSELEY, Frederick York.—(*Provisional protection only.*) —Shearing sheep or other animals.

The apparatus is also intended for clipping horses. The moveable cutter is driven by a coiled spring acting through a train of wheels. The speed is regulated, and the apparatus started or stopped " by means of a brake or other equivalent."

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1875, April 8.—No. 1279.

SHELLEY, John Skeffington.—(*Provisional protection only.*) —Horse clipper.

A " dome-shaped upper plate " rotates on a circular plate a portion of the rim of which is cut into teeth. " The under " portions of the cutting surfaces " of the upper plate are by preference " fluted." The upper plate has motion given thereto by a handle and spur gearing.

[*Printed*, 4*d*. *No Drawings.*]

A.D. 1875, April 21.—No. 1452.

LONGDEN, David.—Sheep shears.

The invention " consists in so shaping the bows or half " bows that the ends meet 'butt on,' and in rivetting an " outer and an inner, or both an inner and an outer plate, " or it may be a slip piece or cup of iron, steel, or other " metal on or over the meeting ends of the bows."

[*Printed*, 8*d*. *Drawing.*]

A.D. 1875, April 22.—No. 1475.

WINDER, Richard, and PRITCHETT, Henry.— Horse-shoes.

The shoe is formed of two plates with a layer of india-rubber between. One plate is nailed to the foot and the other secured thereto by lugs and pins, dovetail keys, wires, &c. The india-rubber may be cemented to the iron. For travelling on ice, &c., the lower plate may be removed and the india-rubber allowed to come upon the ice. The lower plate may be "in several "parts," or may have holes therein so that the india-rubber may rest on the ground.

Instead of india-rubber, springs of any other sort may be employed.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1875, April 28.—No. 1555.

SIMONS, Richard Henry, and MARTIN, Alfred.—(*Provisional protection only*.)—Horse-clipper.

The inventors arrange "the whole of the working parts "upon hardened steel." There are "additional teeth in the "upper cutting plate which in lieu of being shaped as an "arch or a concave plate" is flat. The plates are held by "screws passing through the bottom, and screwing the lower "and upper cutting plates into a steel springing bar." Check nuts are placed on these screws. To work the upper plate "a round pin at the end of the upper lever" "enters a round "hole in the moveable plate, and acts through a sliding "block to the bottom lever." For use with one hand there is "a tumbler motion upon the bottom lever" and the fixed handle is secured to the cover plate. The handles are made with a bow, spring, &c. For shearing sheep a "flat long "and hollowed or fluted tooth" is employed. For greater speed the cutter may be driven through spur gearing by a handle, &c.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1875, May 12.—No. 1772.

WIRTH, Frank. — (*A communication from the Continental Caoutchouc and Gutta-percha Compagnie*.)—Horse-shoes.

A "caoutchouc buffer" is "inserted in the space left " between the under surface of a horse's hoof and the horse- " shoe, covering the frog." The " buffer is on the one side " shaped according to the under surface of the hoof, and is " on the other side provided with two oval holes or indenta- " tions." It is secured by " a strong steel spring passed " through a slit made on the buffer, and lined in the inner " side with textile fabrics, or by means of three flat pieces of " steel to which the caoutchouc mass is cast." The " outer " ends of" the shoe " are bent inwards to prevent the buffer " when placed from coming out backwards."

The drawing shows two descriptions of tongs to be used for placing the " buffer " in position.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1875, June 5.—No. 2068.

LALOY, Jules François Albert.—" Clipping or shearing " hair, fur, pile," &c.

The invention is shown as applied to a horse clipper. Instead of the upper cutter working in a straight line across the lower plate, it is guided by pins working in curved slots so that it gives a drawing cut. The curve of the slot is so formed by preference that " during half of the stroke in one " direction each tooth of the moveable cutting plate passes " over a tooth of the fixed plate, at the same time retreating " from the point of the latter, and during the other half of " the stroke each tooth of the moveable plate passes over " another tooth of the fixed plate, at the same time advancing " towards the point of the latter."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1875, June 5.—No. 2070.

YATES, Walter Edward.—Rendering hide impervious to moisture.

Improvements on No. 2509, A.D. 1874.

The invention relates specially to a method of treating horse-shoes made of hide for the above purpose. Linseed oil is boiled with litharge in the proportion of 3½ oz. to the gallon. The sediment is allowed to settle, and the oil is poured into a boiler in which the shoes are placed. The air is exhausted for a short time. Heat is then applied, and more oil is pumped in to produce pressure. The shoes are kept in the oil under pressure for a week, after which they are placed in a stove, where they are kept for a week.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1875, June 5.—No. 2072.

PILTÉ, Alphonse.—Horse-shoes and machinery for making the same.

The bar is rolled in a pair of rolls which shape it as required on all four sides simultaneously. It is next taken to one of two machines described for bending it. One of these acts vertically, the other horizontally. In the first a pair of slides carrying rollers work one on each side of a fixed mandrel. In the second a pair of rollers carried by levers and guided by cam surfaces work vertically over a mandrel which is pivoted and tilts over when the rollers have passed it to discharge the shoe. This tilting is effected by means of a "buffer" on the slide carrying the levers. The rollers at the lowest point of their travel dip into a basin of water to cool them. The shoe is then placed in a die, over which works a counterpart die operated by a steam hammer. In this the shoe is hammered, and the holes punched for the nails. The finished shoe is discharged by means of a pair of levers, the ends of which come under the heels of the shoe. These levers are worked by hand.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1875, June 16.—No. 2216.

PHIPPS, Thomas Lovell, and BURMAN, William.—Horse-clippers.

Improvements on No. 2970, A.D. 1873.

" Instead of using a bow spring between the expanded or " cover part of the fixed handle and the moveable cutter of " the clipper for maintaining the required pressure of the " said moveable cutter upon the fixed cutter," as in the previous invention, the cover itself acts as a spring. For this purpose it has a " bow or convex figure," and is " of such a

" thickness of metal that it is capable of yielding." "The " ends of the elastic or spring cover of the fixed handle bear " upon the moveable cutter near the ends of the latter, and " by means of the screw nut working on the central screw pin " of the clipper, or a cotter passed through a central pin, the " desired pressure may be put upon the moveable cutter." " The ends of the elastic cover are provided either with " cylindrical or square studs for passing through the guiding " slots in the moveable cutter, and taking into holes in the " fixed cutter." The elastic cover may also be of a "flat " rectangular figure with inclined edges."

Clippers may be made reversible, so that when one edge is worn, the other may be brought into use. For this purpose there are made "in the moveable cutter, and near opposite " edges two oblong slots, into one or other of which slots the " stud of the moveable handle or lever of the clipper takes for " giving the required to-and-fro motion to the said moveable " cutter." To reverse the cutter, the screw is loosened and the handles shifted.

To make the cutters or clippers, bars of steel are rolled in grooved rollers, so that they have "in cross section a shallow " trough figure on one face, the bottom of the trough being " flat or slightly concave." "The trough-shaped face described " of the bar constitutes in the finished cutter the inner face " of the said cutter, the thick marginal parts being made into " the teeth or cutting edges of the cutter." The bars are cut into blanks of suitable length, and the blanks " are made into " top cutters in the ordinary way." For the bottom cutters the bars "have the outer angles of the marginal parts bevilled " or inclined, and the back face of the bar made convex."

[*Printed*, 1*s*. 2*d*. *Drawings*.]

A.D. 1875, June 17.—No. 2233.

TURQUAND, William Michael Glynn.—"Apparatus to be " used for shearing sheep."

The apparatus is intended to hold the sheep while being shorn. Two flat frames are supported by pins in their ends working in slots in arched standards at the ends of a main frame which stands on the ground. These frames are furnished with clips for securing the head and legs of the sheep.

To use the apparatus one frame is turned into a vertical position, and the sheep is attached thereto, it is then turned down and one side of the sheep shorn. Next it is turned up, the other frame brought against the other side of the sheep, which is secured thereto and the second side of the animal is operated upon.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1875, July 24.—No. 2640.

ADIE, Patrick.—Horse-clipper.

Improvements on No. 2796, A.D. 1866.

Either or both plates are made with a concavity on the inner side so as to form an oil reservoir. By means of grooves the oil is allowed to pass to the rubbing parts. The plates are held together by three screws or bolts passing through a single washer, in which also are formed oil cavities. Oil is supplied to the space by an opening which is closed when the handles are brought together and opened when they are separated.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1875, August 3.—No. 2729.

WETTON, Charles Edgar.—" Magnetic apparatus."

" Arranging and fitting the magnets in such a manner that " when applied to the human body or the bodies of animals, " they are covered externally " with a " suitable non-conducting material," which, in the case of animals, may be tarpauling, prepared canvas, or other suitable economical " material."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1875, August 25.—No. 2980.

FOULKES, William Decimus Inglett. — (*A communication from Stephen Weston Foulkes.*)—Dressing for foot and mouth diseases, foot rot, &c.

The " essential oil called oil citronelle " is used as a dressing. The mouth is dressed with the oil alone, and the oil mixed with equal proportions of coal tar is used for the feet.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1875, September 9.—No. 3168.

DALE, Thomas Hastings.—" Hydropathic garments."

Waterproof garments lined with felt, and made to fit the body closely, are used instead of the wet sheets employed in hydropathic treatment, the linings being soaked with water before application. The garments are so made that they can be laced or otherwise fastened tight to the body.

" The dress in a modified form is applicable for veterinary " purposes; for example, to cure gripes, spavins, swellings, " and such like in horses and other animals," also for "loin " pads, and pads for the chest and throat."

[*Printed*, 10*d*. *Drawing*.]

A.D. 1875, September 14.—No. 3216.

GEDGE, William Edward.—(*A communication from Auguste Barennes.*)—(*Provisional protection only.*)—Horse-shoes.

A dovetail groove is formed in the tread surface of the shoe of the same shape as the outline of the shoe itself, and into this groove "india-rubber, gutta percha, cork, or other analo- " gous material" "is set by pressure." The shoe may be made by casting in malleable iron or steel, "of wrought iron, " the groove being cut out by the aid of any suitable cutter, " planing machine, or other tool," or "in the rolling mill by " producing a groove with vertical sides upon a bar of metal " slightly arched in its breadth, so that in straightening it " the two edges come nearer to each other and form the " dovetail."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1875, September 28.—No. 3382.

LYON, William Penman.—" Applying magnetism for cura- " tive and other purposes."

The invention, so far as it concerns this series, relates to the following :—

1. Making parts of curry combs of steel "rendered mag- " netic as required, so as to convey magnetic currents to the " bodies of animals."

2. Arranging magnets under the floors of stables and sheds,

or embedding them in fields, so as to affect animals passing over them.

[*Printed*, 6*d*. *No Drawings*.]

A.D. 1875, September 28.—No. 3383.

COURTOIS, Charles.—Horse clipper.

The fixed handle is secured to a "base plate" on which the fixed and moving cutter plates are mounted. The end of the fixed handle forms a stop against which the edges of an opening in the moving cutter strike, so that the guide studs do not receive any shocks. There are two springs at the back under the moving cutter. Washers on the guide studs cover the slots in the moving cutter, and these washers may "form "springs." The edge of the ferrule on the wooden handle is turned over into a groove in the handle to secure it. To enable the apparatus to be used either right or left handed, one of the handles is detachable and can be fitted on either side to a short jaw pivoted on the centre pin, and operating the cutter. Both cutters may be driven, one by each handle, which are jointed together by a joint, such that their play is limited. Instead of the parts being connected by screws and nuts, plain guide studs are used, and the upper plate is kept down by a spring which is forced down by a washer on the centre pin; this washer fits under projections on the pin, and is kept from turning by a spring catch fitting on the fixed handle of the apparatus. As the cutter plates wear, they are replaced by fresh ones.

[*Printed*, 10*d*. *Drawing*.]

A.D. 1875, November 2.—No. 3804.

FINNEY, John. — (*Provisional protection only.*) — Treating foot and mouth disease.

The mouth is cleaned and sponged with a solution of saltpetre in spirits of wine, in the proportion of a quarter of a pound to a gallon. The feet are treated with tincture of iodine applied with a brush.

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1875, December 4.—No. 4205.

PRICE, Edward, and PRICE, Edward the younger.—Horseshoes.

The bar iron from which the shoes are made is thicker than usual, the "thickness of the bar being little less than its "breadth." The upper face of the bar is "not quite flat," that side which forms the inner side of the shoe being "of "somewhat less depth than the outer side." The sides of the bar are not quite at right angles to the bottom face, both the "said sides being slightly inclined." The lower face of the bar has a **V**-shaped groove in it, "the wide end of the said "**V**-shaped groove being nearer to the side which is situated "inwards in the finished shoe than to the other or outer "side." The sides of the groove are "both inclined to the "bottom face of the bar, that side of the groove which is "towards the outside of the shoe being nearly perpendicular "to the bottom of the shoe, while the other side of the groove "makes an angle of about forty-five degrees therewith." The shoe is made by being "bent around a mould of the required "form" and is "finished by having the required nail holes "made in it in the usual manner."

[*Printed*, 8*d*. *Drawing*.]

A.D. 1875, December 10.—No. 4290.

SWAIN, Josiah, and CHAMBERLAIN, William.—Horseshoes.

The shoes may be made of any suitable metal and in any suitable manner. They are formed with "cells in the faces of "the shoes and recesses to receive the nail heads." They may be made "either with or without protecting plates or "webs extending across the shoes."

The "ridges or the walls of the cells bear equally upon the "ground." They "tend to prevent the shoe from slipping "upon ice," &c. The "cells" may be filled with wood, "cement, sulphur, lead," &c. The wood is set with its grain "at right angles to the face of the shoe." It may be compressed before insertion. Spikes, &c., may be driven into the wood or other substance.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1875, December 17.—No. 4382.

MARTIN, Albert.—"Apparatus for clipping or shearing "animals."

The clipper is driven by means of a flexible shaft, consisting of a coiled spring. This gives motion to an eccentric on a spindle passing through the cover plate, which "is received "into a hole bored in a small rectangular block which lies in "a slot formed in the upper cutter plate." "This slot is at "right angles to the line of cutting teeth, so that when the "eccentric is revolved the cutting plate is moved to and fro "parallel with the line of teeth, and is guided in its move"ment by guide pins passed through slots formed in it." The apparatus is held by a handle fitted to the lower plate. The flexible shaft is connected to the end of a tubular shaft mounted on a counter-balanced arm, and to this tubular shaft motion is given by endless band gearing. The flexible shaft passes into the tube, and to enable it to be lengthened or shortened, "at the lower end of the tube is carried a clip to "clip the coil at any part of its length." To enable the apparatus to be used under the belly of a horse, "the lower end of "the tube or rod may have connected to it by a short coiled "spring another short shaft which may be held horizontally, "and this shaft be in turn connected by a coiled spring to the "spindle of the clipping apparatus."

Instead of the clipper a rotary brush may be mounted on the end of the flexible shaft.

[*Printed*, 10*d*. *Drawing*.]

1876.

A.D. 1876, January 6.—No. 67.

JOHNSON, Edward.—(*Provisional protection only.*)—Horse-shoes.

Securing horse-shoes to the foot without using nails. The inventor says:—"I take say an ordinary horse-shoe, and form "for the hoof a frame or plate corresponding as nearly as

" possible to the shape thereof. This plate or frame is in-" tended to extend round or partially round the hoof and " beyond the largest diameter thereof. At this point I hinge " or joint two tail or additional pieces which when brought " together complete the circumference of the feet." The shoe is attached to this plate, or may be in one piece therewith, and the hinged portion is also secured to the shoe, " whereby the same is firmly secured to the foot of the " animal," but can be removed by withdrawing the rivets, &c. securing the shoe to the hinged portion. A packing of felt, &c. may be fitted within the frame.

[*Printed*, 2*d*. *No Drawings.*]

A.D. 1876, January 17.—No. 172.

LANSLEY, JOHN. — (*Provisional protection only.*) — Horseshoes.

For roughing shoes studs are fitted into holes therein, and the shoe is also fitted with a "metal toe piece." The studs, &c. are made "with a pin rod or bar having a collar so that " the pin rod or bar can be inserted into the holes in the shoe " as far as the collar, after which the pin rod or bar is to be " rivetted down flush so as to fill the hole."

[*Printed*, 2*d*. *No Drawings.*]

A.D. 1876, January 18.—No. 198.

LITTLE, WILLIAM.—"Cleansing and disinfecting fluids for " washing sheep," &c.

The heavier products of the distillation of coal tar, and the products of the distillation of resin, are mixed in the proportion of two of the former to one of the latter. Equal parts of the mixture and of "oleate of potash" are combined by the aid of gentle heat. After standing twenty-four hours, nine gallons of a solution of caustic soda are added to two hundred pounds of the compound. "The oleate of potash should be transparent, " and consist in 100 parts, about 43 oil, 10 potash, and " 47 water." The solution of caustic soda contains "10 per " cent. of pure soda."

Before using, bisulphite of carbon is added to the compound.

[*Printed*, 2*d*. *No Drawings.*]

A.D. 1876, January 20.—No. 222.

TURNER, Alfred William, and WILSON, Newton.—Apparatus for grooming horses, &c.

The Specification describes an arrangement of shafts connected by flexible joints formed of coiled wire, by which motion can be transmitted in any direction. The "same " arrangement of shafts and universal flexible joints may also " be used for working horse clippers or sheep shearers."

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, January 21.—No. 241.

HEYWOOD, Henry John.—(*Letters Patent void for want of Final Specification.*)—Horse-shoes and methods of fitting the the same.

The shoes are of steel rolled with grooves and with ridges or studs to prevent slipping. The lengths are marked out in the rolling and are afterwards cut off and bent by hand or by machine. The shoes may be with or without caulks and toe pieces. They are fitted "so that the frog of the boot bears on " the ground."

The shoes are made in sizes and numbered. The foot is measured by a gauge formed of a strip of steel mounted on a plate and adjustable by screws so that it can be caused to take the form of the exterior of the hoof.

[*Prnited*, 2*d*. *No Drawings*.]

A.D. 1876, January 25.—No. 287.

SPONG, James Osborn. — (*Provisional protection only.*) — Roughing horse-shoes.

A "somewhat † -shaped plate" is fitted with studs to serve as roughing pieces, such studs being screwed into the plate, cast thereon or otherwise formed, Or instead of these studs suitable recesses may be formed in the plate. On the inner side of the plate are one or more projections which fit over the inner edge of the shoe. "The plate also carries a bar which " is formed to slide on **V** or other suitable guides, and its " ends are also formed to catch between the inner edges of the " shoe and the foot, or to act on other lever pieces with similar " holding action, and be then tightly held by the action of

" tightening screw motion." "This screw motion is readily " acted upon by a key applied at the heel of the foot." "The " parts of such screw motion are protected from injury by " lying between the plate and the foot." "The double ended " bar may be stationary, and the overhanging projection or " projections may be actuated by screw motion." The improvements are "also applicable when the holding to the shoe " is by clipping the exterior of it."

[*Printed*, 2*d*. *No Drawings*.]

A.D. 1876, February 3.—No. 441.

LAKE, William Robert. — (*A communication from Edwin Lawrence Tevis.*)—Horse-shoes.

The heel and toe calks are formed with tenons which fit in mortices in the shoe. The calks are secured by "staples" driven into slots in the tenons and through openings in the shoe, so formed that they spread out as they are driven in and secure the calk. The toe calk has a flange projecting upwards in front of the shoe. The calks may by this arrangement be taken out and replaced.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, February 17.—No. 667.

LAKE, William Robert.—(*A communication from William Morris Greenwood and John Norris Clarke.*)—(*Provisional protection only.*)—Horse-shoes.

1. "Improved horse-shoe blank constructed with a corru" gated ground surface of calks located at equidistant points, " and a fullering or nail crease on the outside of the web " above the corrugations or calks."

2. "Forming the blanks by subjecting a plain blank suc" cessively to the action of a series of suitable dies."

3. "Mechanism comprising two rolls journalled in suitable " standards and working together, and provided with a series " of dies and counter dies, between which the blanks are " successively passed."

4. "Die for forming the corrugations or calks, and the nail " crease upon the blank constructed with convex projections " for forming the calks, and an angular shoulder for forming " the fullering."

5. " A pair of rolls, one of which is provided around its " periphery with a die, whose face is formed with a series of " convex projections at regular intervals, the other having a " plain counter die and the two being arranged to work " together to produce a series of corrugations upon the " blank."

[*Printed*, 2*d*. *No Drawings*.]

A.D. 1876, February 29.—No. 845.

SMITH, MILES.—Roughing horse-shoes.

Heel and toe calks are made with plates by which they can be attached to the shoe. The calk stands out from the plate which fits flush against the tread surface of the shoe. The plate has projecting pieces which clip over the edges of the shoe, or one such piece and a stud fitting in a lug formed on the shoe, or a stud fitting a slot in the shoe, and in all cases it has also a screw or two screws which fix it to the shoe. Calks are also used which screw into the shoe; these have " double " cutting edges in the form of the letter **X**." The calks are " somewhat rounder or eliptical so as to avoid the wedge " form " and there is " a broad shoulder on every side of the " holding pin or screw."

[*Printed*, 6*d*. *Drawings*.]

A.D. 1876, March 9.—No. 1033.

WISE, WILLIAM LLOYD.—(*A communication from James A. Burden.*)—Machinery for making horse-shoes.

The invention refers to a method of finishing machine-made shoes. The shoe after being made, creased, and punched, is passed through a machine which " pressing against the outer " edges forces the material back to its proper place, narrows " the creases and the holes as much as may be desired, brings " the outer edges sufficiently near to the holes, and gives a " smooth and perfect outline to the shoe." The machine may be of various forms. In the form described, the lower dies are carried on the periphery of a wheel which is carried round by a ratchet movement after the completion of each shoe. The upper die is carried by a plunger worked by a cam. As the shoe is held by the upper and lower dies, it is acted upon by side dies carried in slides which are forced forwards by eccentrics. The bar may also be treated before it is bent. In this case it may be submitted to a pair of dies, or a pair of rollers.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, March 30.—No 1361.

CLARK, Alexander Melville. — (*A communication from Charles Henry Shepard*.) — (*Provisional protection only*.)— "Device for expanding hoofs."

The appliance is intended for preventing and curing contraction of the hoof. A "**V**-shaped spring" is "secured in "the cleft of the frog or cavity between the frog and the "hoof." The spring "may be slightly curved in the outward "or inward direction to conform to the interior shape of the "hoof." The spring is held in place by "lighter interior "springs" attached thereto and by "outwardly curved "tapering projections or prongs at the extremities of tho "**V**-shaped mainspring that are forced into the bar or the "bar and shell of the hoof." "The interior springs may be "dispensed with when a greater number of tapering prongs "or projections are employed." The inventions may be applied to the hoof with or without a shoe.

[*Printed*, 2*d*. *No Drawings*.]

A.D. 1876, April 5.—No. 1460.

BENTHAM, Henry Winchcombe. —Apparatus for shearing sheep.

A spindle with a handle at each end carries on it a pulley driven by a band from a horse gear or other motor. A pinion on the spindle drives a spur wheel on a second parallel shaft mounted in bearings carried by the handles. On this second shaft is a cam, working against a lever arm pivoted on the stem of one of the handles, and having its other end crooked and bearing against the back of one of the blades of a pair of shears, the other blade of which is supported by a stem from the handle. The action of the cam closes the shears which are opened by a bow spring of the ordinary character. The cam can be thrown out of action by means of a thumb lever which slides its shaft lengthways. It is brought back by a spring. Instead of a pair of cutting blades several blades may be used, acting in the same way.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, April 7.—No. 1489.

HADDAN, Herbert John. — (*A communication from John Bowman Wills*).—Horse-shoe nails and machines for making the same.

The invention relates to:—(1.) Machine for cutting blanks cold from a strip of iron. (2.) Machine for cutting blanks hot. (3.) Making nails "having hardened points and annealed " bodies by a process of rolling or working." (4.) Machine for "elongating the blanks." (5.) Machine for pointing and finishing the blanks. (6.) Machine for "welding the 'short " 'ends' of bars or rods of iron used in making varieties of " nails arranged to reduce the weld down to the size of the " original bar."

1. The blanks are cut by a cutter so shaped that it forms the head; as soon as the blank has been cut, it is acted on by four dies, which shape the head, the action of the dies being timed by suitable cams to seize the blank as the cutter severs it from the strip. The strip is turned over between each cut.

2. In this machine the cams are so arranged that on each revolution of the cam shaft two blanks are cut, instead of one, the feed mechanism being fitted to correspond.

3. The blank is treated by a "system of dies or rolls that "are capable of extending the blank (cold) and pressing head " and extending the part of the body next to it, or between it " and where the pointing commences, into the exact, or nearly " the exact shape required while the material which is to " form the point is left comparatively of considerable thick- " ness."

4. The blanks are then annealed in a furnace, and treated by rolls carrying dies of suitable form to roll them down to the desired length, leaving them ready for pointing.

5. The blanks are placed in slots in a revolving plate which carries them round under dies which shear the point and flatten out the nail.

6. For welding short lengths of iron together, they are,

after being raised to a welding heat, passed between a pair of dies operated by a cam. These weld the ends together, and bring the weld to the same size as the rest of the bar.

[*Printed*, 8*d*. *Drawings*.]

A.D. 1876, April 27.—No. 1777.

ANDREWS, David Allen. — "Machinery for selecting, " assorting and presenting nail blanks for animal shoe nails " to nail-making machinery."

The apparatus is intended for feeding nails into the machine described in No. 950, A.D. 1872.

"The blanks are placed in a hopper, from which they are " lifted, one or more at each movement of the lifter, and " placed on a shelf, from which they are then raised by a " selector and placed on a table over which they move down " to a nail detainer which is shown as a slide bar." "When " the detainer is retracted, the nail held by it, if right side " up, will slide down the inclined way between the guides, " and will pass under the gauge and down to the stop, and " nails right side up will be accumulated in the inclined way " above the stop. Now when the stop is removed or retracted " the second nail above the stop will be pressed and held by " the holder, and the lowermost blank in the slide will be " allowed to fall into the mouth of the guide tube, and a " deflector in the mouth of the tube will meet the edge of the " blank and stop it sufficiently long to permit the head of the " blank, the heaviest end, to get the start of the point end, " and the head of the blank will therefore always lead in the " passage of the blank through the guide tube and to the die " rolls." "All the blanks wrong side up will be stopped by " the gauge shaped on its under side to permit the passage " under it of only such blanks as are right side up, and " blanks stopped by the gauge and supported at their ends by " slide rests are dropped into a blank receiving box as the " slide rests are retracted, and from this box the blanks are " carried by a feeding mechanism back to the hopper."

[*Printed*, 6*d*. *Drawings*.]

A.D. 1876, June 2.—No. 2332.

BATE, Henry.—Horse-clipper.

A rotary cutter is employed. This is mounted on a circular comb plate and has motion given to it by a winch handle through multiplying gear. The cutter may be a "sharp "edge circular knife," or may have "hook or other shaped "cutting teeth." "The requisite revolving motion may be "given to the disc by a second horizontal handle" "being "pushed forward and backward while the machine is advancing." In some forms of the apparatus, "a sharp "cutting blade is introduced at the postern part of the teeth "of the comb to meet the knives on the rotating cutter." The rotatory motion may be derived from a roller running over the animal's coat. In this case a knife with helical blades is employed, these blades being mounted on an axis parallel with the roller.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, July 4.—No. 2743.

TURQUAND, William Michael Glynn. — "Machinery for "shearing or clipping sheep."

A pulley driven by an elastic band is mounted in a frame with a handle by which it can be moved over the animal's skin. An eccentric driven by the pulley operates a pivoted cutter blade which reciprocates over a comb-plate fixed to the front of the apparatus. Guide pulleys are arranged to prevent the driving band leaving the pulley. The whole apparatus is covered with a sheet metal cover.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, July 8.—No. 2783.

WHITEFORD, James.—Horse-shoes.

The shoes are of leather, gutta percha or india-rubber with or without a proportion of emery, &c. added. Layers of canvas connected by india-rubber, marine glue, &c. may also be employed. This flexible shoe may also be attached to a "disc "of thin sheet iron," &c., secured by rivets. When nails are used to secure the shoe they are made with heads of special shape "circularly or ovally, conical, conoidal, or pyramidal." They "serve instead of an iron shoe for preventing the wear "of the soft shoe." The heads may project more or less, or be flush with the surface of the shoe. When the iron plate is used there may be holes in the rivets through which the nails are driven. These may also be formed as studs, or studs may be cast on the plate.

The shoe may also be secured by straps attached thereto and buckled over the hoof.

[*Printed, 6d. Drawing.*]

A.D. 1876, July 12.—No. 2839.

FLAGLER, HARVEY KLAPP, and VERY, THEODORE STAFFORD.—(*A communication from Hazen Jay Batchelder.*)—Horse-shoe machines.

A "former" is mounted on the bed-plate, on which also is a sliding carriage having pivoted upon it a pair of lever jaws. As the carriage comes forward, the jaws are caused to bend the blank round the "former," fixed guide rollers being arranged to guide the jaws round the "former." The "former" is mounted on an anvil capable of moving vertically to allow punches to project up through holes in it as it is forced down. A "creaser carrier" on the end of a lever arm is brought down on the anvil by means of a cam. The "creasers" are not set rigidly in the "carrier" but are held in slots by springs, so that they may "move "laterally with the blank, as the latter may be expanded while "being shaped and seated." The "creaser carrier" is connected to its "head block" by means of a rod passing loosely through a hole in the block, and held by a spring, so that the "creaser carrier" may "maintain its parallelism with the "anvil under the curvilinear movement of the head stock." The rod from which the blank is to be cut is fed in through a transverse channel in the bed-plate, the bottom of which is a bar which rises at intervals to lift the blank into position. The blank is severed by a sliding cutter acting against a fixed cutter. Shoulders on these cutters also serve to compress the ends of the blank. When the shoe is finished the "former" is drawn back and the shoe is removed from it by "dogs" on a lever against which it is carried. Another lever locks the

" former" in position while the shoe is being bent round it, but is withdrawn to allow the former to be retracted.

For "shoes requiring to be 'seated' or concaved" an additional plate is attached to the anvil by screws. For shoes which have no "creases" "hemmers" are used, the dies to " form the nail holes being made plain, or without any " creasing edges."

[*Printed, 6d. Drawing.*]

A.D. 1876, August 4.—No. 3107.

GRIER, William Fisher.—Compound for preserving food, &c.

The composition may also be used for treating sores in animals. It consists of—

" Hydric borate," 3 oz., " sodic diborate," 4½ oz., glycerine 4½ oz., with or without " white sugar," 3 oz. For medical purposes it is applied as a liquid, or as an ointment, being mixed with " cetaceum or lard." The " hydric borate and " sodic diborate" may be used without the other ingredients.

[*Printed, 4d. No Drawings.*]

A.D. 1876, August 22.—No. 3287.

CALDWELL, Joseph.—" Unguent for the treatment of " sores."

The ointment may be used for animals. 2 oz. beeswax and 1 oz. resin are melted, 2 lbs. palm oil and 8 lbs. lard are added, and the whole boiled for half an hour. In summer ½ lb. mutton suet is added to the above.

[*Printed, 2d. No Drawings.*]

A.D. 1876, September 13.—No. 3592.

CLARK, William.—Shearing sheep.

Improvements on No. 1645, A.D. 1866.

The instrument consists of two serrated cutter plates operated by handles after the manner of a horse-clipper. The cutting edges of the teeth of the upper cutter have a "convex for" mation." "Pressure fingers" are used to keep the plates in cut. Studs upon these fingers pass through washers and fit in slots in the moving cutter plate, and serve as guides therefor. Or the fingers may be "made rigid and provided "with set screws which enter recesses in the washers; the "under surface of these washers form studs" "which enter "the slots of the plate." Or a pressure plate may be used "which is fixed and arranged to exert a pressure only on the "roots of the teeth of the cutter plate." A coiled spring serves to open the handles. It may be mounted on the "fulcrum stud" and press upon the "throw pin or on a "pin" "fixed in the working handle," or it may be placed between the handles. In clippers "whose cutters have an "oscillatory movement or throw," a pressure plate is used. This plate "is fan-shaped and so constructed that its seg-"mental extremity will bear uniformly on the cutter plate." The pressure is adjusted by a nut on a stud, with a spring washer.

The apparatus may be worked by means of a pulley over which an endless cord passes. The pulley drives a crank disc from which motion is transmitted through a lever to the cutter. In these apparatuses an additional handle may be mounted on the top of the frame.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, October 14.—No. 3972.

RILEY, John.—(*Provisional protection only.*)—Horse-shoes.

The "invention consists in securing to the under side of "the shoes at the toe or 'sprun' part a box, case or socket" of a dovetail form "and also slightly taper lengthwise." "Separate pieces or dies" are driven into the "box." The pieces are of any form required for roughing, &c., and pieces of different shapes may be inserted according to the work to be done. Similar pieces may be applied at the heel.

[*Printed*, 2*d*. *No Drawings*.]

A.D. 1876, October 16.—No. 3990.

MEARNS, James, WANDLESS, William, and CHARLTON, Thomas.—"Apparatus for making horse-shoes."

The bar, cut to the right length, is placed in a press and acted on by a "creasing tool" or die which forms the grooves. The die is made of "two duplicate portions and secured to

" the holder" by bolts and nuts. By introducing a "liner" between the two parts the space between the grooves can be varied.

The press may be of any suitable kind. It has a quick return motion effected by "causing the holder of the die or " stamp to be in connection with the short arm of a powerful " horizontal lever, the fulcrum being supported by the frame-" work of the press. The long arm of the lever may be raised " by a crank pin or suitable cam to the required height, " and then left to fall freely by its own weight, thus quickly " raising the short arm" "and returning the die or stamp " for another operation."

After being stamped with the grooves, the bar is bent by hand or machine.

[*Printed, 6d. Drawing.*]

A.D. 1876, November 9.—No. 4333.

ATKINSON, George Thompson.—(*Letters Patent void for want of Final Specification.*)—Horse-shoes.

" Elastic toe and heel calks" are employed. These calks are "wholly of elastic material or partly thereof and partly " of any hard substance, either sandwich fashion or other-" wise mixed." The shoes are " cut or stamped out in any " convenient form to hold the calks; the calks may be fitted " in by pins or by other means before fixing, or when on the " animal's foot."

[*Printed 2d. No Drawings.*]

A.D. 1876, November 28.—No. 4597.

MONCKTON, Edward Henry Cradock.—Generation and application of electric currents.

Various improvements in electrical apparatus are described. Amongst them are included "electrical wire brushes for " curative purposes." These are by preference " circular and " rotating in the manner now applied to brushing hair, " and to brushing horses and other animals." "These " brushes being insulated one pole of the battery is applied " by preference to the metallic centre to which the wire " forming the brush is attached, while the other part is " applied to some part of the animal, as, to say, its leg."

Electricity is applied to the human subject by passing it through the bodies of animals, but no such method of using it for veterinary purposes appears to be referred to.

[*Printed*, 8*d*. *Drawing*.]

A.D. 1876, November 28.—No. 4603.

JARVIS, John Edmund.—Horse-shoes.

A pad of india-rubber or leather is fitted in a groove in the shoe. The nail holes are in recesses in the outer rim, and the nails do not pass through the pad. The pad may be secured by screws or rivets, or the inner rim may be loose and be secured to the shoe by lugs and screws, the pad being furnished with a " web of india-rubber covered fabric " which is clamped by the loose rim.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, December 12.—No. 4798.

HASLAM, Luke, and JUDGE, James.—Machinery for making horse-shoes.

The bar is rolled to the shape required. A length is then severed by a circular saw or other appliance. " Immediately " on its severance it is by the movement of a shaping block " pressed against the ends of a pair of jaws," by which and the movement of the shaping block it is bent. The blank is held down by a spring or counterpoised guide. The jaws are mounted on levers, and motion is given to them so as to shape the heels of the shoe on the block.

As soon as this movement is completed, " two projecting " snuggs on the shaping block are brought by its continued " descent into contact with the ends of the partially formed " shoe, which projecting beyond the support are thus bent " downwards and form heels." On arriving at the end of its " downward stroke the shaping block is caused to ascend " through the shoe, the jaws are sprung open by counterpoise " arrangement or springs " and the shoe thrown out by the return of the guide.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, December 13.—No. 4821.

MARTIN, Hugh, and ROBERTSON, Robert.—Horse-shoes.

The blanks are first rolled in rollers which are formed with the "mean circumference of their rolling grooves " equal to the length of two, three, or more of the blanks." The rollers have also "two sets of grooves, one to roll the " iron into parallel bars of near the width and thickness to " form the solid plain parts of the heels, with a sharp raised " part along one face and edge," " which is fed into and retained " close up to one edge of the groove of the last shaping or " finishing set of grooves so as to form the full deep sharp " edge of the front part of the shoe where the rolling surface " of the one roller has raised segmental projections at the " parts to form the sharp indentations or swaged grooves for " the heads of the nails, while rounded broad segmental raised " parts are formed on the proper or corresponding rolling " surface of the other roller to compress or roll the hollow " or concave parts on the inner curved face of the iron " and shoe (next the hoof) from the one bearing part of the " heel to the other, and which consequently thins and broadens " out those parts of the iron and shoes, while the parts of the " rolling surface of both rollers forming the heel parts being " left plain but with a projection" to mark the place where the shoe is to be cut off. Or, instead of the projection, cutters may be fitted to separate the blank.

The blanks are then taken to a stamping machine which stamps the holes for the nails wholly or partly through. The punches are secured in a vertical slide. The blanks are placed under them by hand.

After having the holes stamped the blanks are taken to a shaping machine, by which they are bent into the horse-shoe form, the blank is placed in front of a shaping block, which by means of a hand lever is connected to an endless chain travelling over a table, and is thereby drawn forward against the blank, which is held to the shaper by a clamp also actuated by the hand lever. The shaper is drawn forward between two side plates, and the blank thereby bent into the required shape. Presser plates are also driven against the heels of the shoe, so as to force them inward against the shaper. The shoe is lastly finished in a die. Heavy shoes are "kneed" on " the top of an oscillating anvil block with one blow of a " corresponding 'oliver' or other hammer above, when the " the anvil is tilted in one direction, and straightened or " squared with one or two blows with the anvil set in the " other direction."

The process above described may be varied. The shoes may be punched after they are bent, or punches may be set in the rollers so as to form the holes when the blank is first rolled. The shaping blocks, &c. can be changed to suit different descriptions of shoes.

[*Printed*, 6*d*. *Drawing*.]

A.D. 1876, December 23.—No. 4989.

LEE, CHARLES.—(*Provisional protection only*.)—Horse-shoes.

The shoes are to be worn over the ordinary shoes for the purpose of roughing, or "for the cure and prevention " of sickness in horses by keeping the feet warm and dry," or when horses are turned out to grass. They are made of india-rubber or other elastic material. "The under part on " which bears the metal shoe consists of a horizontal band " or strip of any requisite width or thickness, the area of " the same being equal to and coinciding with that of the " metal shoe, except when this latter may have projecting " pieces of metal," "when the elastic strip or band would " be left open to allow of such projections passing through." " The remaining portion of the elastic shoe consists in the " raised edge or border of the said horizontal strip, which in " circumscribing the hoof of the horse serves for attachment " to and is drawn on and fits the same."

[*Printed*, 2*d*. *No Drawings*.]

APPENDIX.

A.D. 1855, January 30.—No. 230.

HENRI, George William.—" Mixture for feeding cattle."

The invention is intended to give to prepared cattle food the "bitter properties contained in young grass" and other green crops, "such bitter properties having been found as " beneficial to herbivorous animals as salt is to them in " stimulating the stomach and digestive organs."

The ingredients and their proportions are as follows; kidney beans 200 parts, barley 200, oats 200, rice 100, linseed 200, Peruvian bark 10, gentian 15, galingal 4, nitre 14, sulphur 28, resin 10, salt 10, liquorice root 7, carraway seed 10.

The grain is dried and sifted, the whole is then mixed and left for forty-eight hours, after which it is made up into packages.

The proportions may be varied; for a horse in low condition there may be added "about twenty per cent. of the tonic car- " minative and nutritious ingredients." "For a horse of " weakly constitution" "$\frac{1}{5}$th part less of the tonic diuretic " and antacid ingredients" may be used, while increasing the quantity of "the carminative and nutritious ingredients " $\frac{1}{5}$th."

[*Printed*, 3*d*. *No Drawings*.]

A.D. 1855, August 11.—No. 1829.

MORRISON, Alexander Cameron.—Cattle food.

Improvements on No. 230, A.D. 1855.

The ingredients and their proportions are as follows:—Kidney beans 100 parts, peas 100, barley 200, oats 200, rice 100, linseed 200, cinchona bark 10, gentian root 15, galingale 4, nitrate of potash 14, cream of tartar 14, sulphur 28, resin 10, carbonate of soda 14, chloride of sodium 10, liquorice root 7, carraway seed 10, grains of paradise 10, ginger root 14, Iceland moss 10, turmeric 7. Instead of the Iceland moss, 100 parts of arrowroot may be used, or 10 parts of aniseed and 7 parts cardamums. There may also be added "cascarilla "bark, columbo root, canella, canella alba and guaiacum." The grain is dried and sifted; the whole is mixed, left for forty-eight hours, and packed. For a horse in low condition "20 per cent. of the tonic carminative and nutritious ingre-"dients" may be added. "For a horse of weakly constitu-"tion" $\frac{1}{5}$th part less of the tonic, "diuretic, and antacid in-"gredients," while increasing "the quantity of the carmina-"tive and nutritious ingredients $\frac{1}{5}$th."

[*Printed, 4d. No Drawings.*]

A.D. 1859, December 27.—No. 2953.

DE NABAT, Xavier Carrère, and DE NABAT, Armand Carrière.—"Apparatus to shear domestic animals."

Blades mounted on a cylinder in a frame act against a fixed blade. On this blade is a comb. The frame is supported on one of a pair of pivoted handles, and the other handle carries a double rack engaging with a pair of pinions on the spindle of the cylinder; by means of a ratchet arrangement the cylinder is always driven in the same direction.

The Provisional Specification describes the machine as fitted with one handle and turned by a key.

[*Printed, 6d. Drawing.*]

A.D. 1860, September 20.—No. 2290.

LAURENT, Victor Hippolyte.—Nail-making machines.

The nail is forged by means of four hammers striking to a common point; two are vertical, and two horizontal, and the opposite hammers strike simultaneously, alternating with the other pair. The nail blank is formed on the end of a rod of iron fed in to the hammers. The stroke of the hammers is regulated by shifting an "eccentric die," by which the connecting rod of each hammer is attached to the crank which operates the hammer. To forge the nail taper, the stroke of the hammer is regulated automatically. The hammer is attached to its carrier by a spring. A wedge is arranged so that it is driven in to close the spring, and thereby retract the hammer a little after each blow. This wedge is operated by means of an eccentric, the eccentrics for the different hammers being so shaped as to produce the required effect. A slider is arranged to come down on the rod and hold it at each stroke of the hammers, or a spring piece may be substituted, or a ring "so combined that it should open when the rod is getting " out." The "forging stamps" are of a special form, "con- " sisting, 1, of an inclined surface which begins the forging ; " 2, of another small surface nearly at right angles to the " motion of the hammers; 3, of another surface in the same " direction, but a little lower, intended to prevent the stem " of the nail being bent."

"A number of iron rods intended to be turned into nails are " heated at their ends in any convenient furnace ; when hot " enough they are introduced into the feeding apparatus, " which brings their ends, according to a certain rule, to the " forging action of the hammers, which shape the stem or " shank of the nail ; when this operation is completed the " feeder moves out and drives the said stem or shank into a " heading stamp, then a cutter cuts from the rod the part " intended for the nail, the stem of which is already forged. " The heading stamp moves away with its nail, and stops " before a stamping punch, whilst another hot iron rod having " been introduced by the workman into the feeding apparatus " whilst the first one was being forged, is brought now to the " forging action of the hammers."

The feed apparatus consists of a pair of sockets mounted on a curved arm loosely centred on a shaft so that it can swivel but not slide thereon. This shaft has the necessary longitudinal motion to bring the feed to the hammers. By means of a cam with two circular surfaces the arm is tilted over on its axis so as to bring each socket alternately opposite the hammers. Each socket is fitted with a slide which by means of a lever is brought down on the rod in the socket and holds it while it is being forged. A modification of this holding device is described in which the rod is held by a screw. When the forging is complete the feeding lever traverses back, and a " heading stamp" is brought up into a position to receive the nail. A cutter cuts it off and the stamp moves down carrying the severed nail, till it arrives opposite a punch, which forms the head. The inventor may "fill out the place of the head- " ing stamp by dies capable of opening and shutting, and to " yield in the same time to the required motion for the intro-

" duction of the nail and the stamping of the head." In stamping the head the pressure may be varied by means of " an eccentrical die carried by the rod actuating the heading " punch."

For punching the heads of horse nails, the heading punch is " run through by the thinner end of a peg." " When the " stamping takes place the head of the nail pushes back the " peg out of the recess of the punch." " The effect of that " spring peg is to prevent the nail from sticking to the heading punch."

Two devices for removing the nail from the heading stamp are described. In one of these a rod is caused to strike " a " blow lengthways on the end of the stem of the nail;" in the other nippers are caused to grasp the head of the nail and withdraw it.

In making horse nails a special machine is employed to cut and finish the point. The nail is held by nippers so operated by a right and left hand screw that the centre of the nail is always kept in the same line. The lever carrying the cutter carries also a revolving file which comes down on the point after it has been cut and finishes it.

The various parts of the invention are described at considerable length in a Specification of 28 pages, illustrated by 9 sheets of drawings.

[*Printed*, 5*s*. 4*d*. *Drawings*.]

A.D. 1860, October 15.—No. 2510.

McDOUGALL, Alexander.—" Compositions for destroying " vermin on sheep and other animals."

" Crude carbolic acid, or heavy oil of tar or other products " obtained from the distillation of tar," is or are treated with caustic soda or potash, " so as to render it soluble or mixable " with water." The mixture is heated and agitated, " fat, " tallow, or other saponifiable substance " is added, until the whole has " the consistency of a soft paste." The proportions may be varied; those preferred are 2 parts acid, 1 part caustic soda, 1 part tallow, &c. The composition " if not to be used " for salving, may be dissolved in water and used as a bath " for dipping, " or it may be used for 'pouring' or other" wise."

A.D. 1860 . . . . No. 2510.*

Disclaimer and Memorandum of Alteration to the Specification of the preceding invention, filed A.D. 1864, August 12, by Alexander McDougall, whereby he abandoned his claim to the exclusive use of carbolic acid in making compositions for destroying vermin on sheep, &c.

[*Specification printed, 4d. No Drawings.*
Disclaimer, 4d. No Drawings.]

A.D. 1862, October 17.—No. 2804.

WICKENS, HENRY.—(*Partly a communication from William Wickersham.*)—" Machinery for making nails."

" The sheet of metal is placed between feed rolls, so that a " revolving cylinder shall bring the rotary cutters fixed " thereon to the metallic sheet in such manner that the first of " such cutters as the cylinder is turned will cut off a nail " from the metal sheet by passing through it, and close by " the edge of a bed cutter to cut the side of the nail, and " close by the end edge of the cutter to make the end of the " nail. Immediately after the said first cutter cuts the sheet, " another cutter cuts off a nail therefrom by cutting the " metal from one end of the nail previously cut off, to the " other end thereof, and forms the end of such nail, and the " feed rollers are moved longitudinally so as to carry the nail " sheet the distance of the width of two cutters, and parallel " with its first position, so that when the cutters pass by the " bed cutters they cut off two nails from the sheet." After the nails have been cut, " one tooth of a ratchet gear is caused " to slip along on the edge of a plate from the narrowest to " the widest end, thereby causing such ratchet gear as it " moves out from the machine to turn to the extent of one " tooth, and cause the feed rolls to feed the nail sheet in " towards the cutters far enough for the width of a nail." " When the machine is extended so as to admit a sheet wide " enough for the length of many nails," " each alternate " cutter in the cylinder is also extended," " so that the cutting edge may be further from the centre of the cylinder " than the intermediate cutters, and the cutters thus extended " cut off the metal forming the ends of all the nails which " the machine cuts, except the out ends of those at the edge

" of the sheet, and in this manner a broad strip of metal can " be cut into nails without being previously cut into strips. " Each cutter is a little inclined to the axis of the cylinder, in " order to make the taper of the nail." Instead of a cylinder carrying cutters, the cutters may be mounted on the end of a lever suitably operated. "For making horse-shoe nails the " sheets can be made with ridges on each side, so as to form " two sides of the heads, and the other two sides of the heads " would be cut by the machinery, and the feeding rolls adapted " accordingly."

[*Printed*, 1s. 4*d*. *Drawings*.]

A.D. 1865, April 6.—No. 973.

MAYNARD, Robert.—Hair-cutting apparatus.

The apparatus is also available as a horse-clipper. A series of helical blades are mounted on a spindle set in a suitable frame and revolved by a pulley and band. These blades act against a fixed blade mounted on the frame. A comb is mounted on the frame so that by means of a lever it can be brought nearer to or farther away from the cutters. Or the comb may be secured to the fixed blade.

[*Printed*, 1s. *Drawings*.]

A.D. 1865, August 23.—No. 2172.

TONGUE, John Garrett.—(*A communication from François Romain Carron, junior.*)—(*Provisional protection only.*)—Horse-clipper.

A number of "helicoidal" blades are mounted on a spindle carried in a suitable frame. The spindle is revolved by a winch handle, and the blades act against an adjustable fixed blade and comb. Oil, &c. is supplied by "a strip of leather " or other suitable material from a tube or reservoir." "In " order to distend those parts of the skin which are wrinkled " or irregular, a rectangular frame is employed, arranged so " as to project in advance of the comb, and by pressing upon " the skin stretch and render it even."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1866, March 5.—No. 667.

GRAY, James.—Preventing incrustation in steam boilers.

The solution to be used for this purpose may also be employed "for washing houses, to remove smells, destroy vermin, &c.; for washing and disinfecting cattle byres," &c."

It is prepared by boiling 3 cwt. of soda ash and 3 cwt. of lime in 200 gallons of water. For the soda ash may be substituted "common soda or potash, or black ash and pearlash," or "kelp from sea wrack."

[*Printed*, 4*d*. *No Drawings*.]

A.D. 1866, October 30.—No. 2796.

ADIE, PATRICK.—"Machinery for clipping horses and other "animals."

1. A toothed cutter works over a comb-plate, motion being given thereto by a projecting piece on a handle pivoted on the comb plate engaging in a slot in the cutter. The cutter plate is kept down on the comb plate by two screws passing through slots therein and screwed into the comb plate.

2. In a modified form of the machine motion is given to the cutter plate by a winch operating an excentric through bevel gear. A rotary brush mounted in front of the cutters is also driven by gearing from the handle.

3. Sheep shears are fitted with "a tooth of a comb fixed "underneath or made in a piece with one of the shear points, "and projecting a short distance in front of the cutting "point, so as to hinder the cutting of the skin and give "greater freedom in dividing the wool."

A.D. 1866, ... No. 2796.*

Disclaimer and Memorandum of Alteration to the Specification of the preceding invention filed A.D. 1870, August 10, by Patrick Adie, whereby he disclaims that part of his invention relating to the modified form of the apparatus in which the cutter is worked from a winch handle, and a rotary brush is employed; also that part of the invention relating to the fitting of comb teeth upon sheep shears.

[*Specification printed*, 8*d*. *Drawing*.
Disclaimer, 4*d*. *No Drawings*.]

INDEX OF SUBJECT MATTER.

[The numbers refer to the pages on which the Abridgments commence. The names printed in *Italic* are those of the persons by whom the inventions have been communicated to the Applicants for Letters Patent.]

- Air, purifying:
  - Hunt, (*Reynoso*), 137.
- Balls, administering. *See* Medicine, &c.
- Bathing and fomenting apparatus:
  - Clark (*Angelini*), 5.
  - Jones, 82.
  - Grigg, 106.
  - Blundell, 113.
  - Dale, 151.
- Boots for horses:
  - Clark, 24.
  - Williams, 44.
  - Holder, 67.
  - Benson (*Lewis and Way*), 94.
- Boots for sheep:
  - Woolrich, 3.
- Calks. *See* Shoes, horse; Roughing, &c.
- Caoutchouc for shoes. *See* Shoes, horse.
- Castrating, instrument for:
  - Thompson, 111.
- Charcoal, medicinal use of:
  - Welton, 37.
- Clipping and shearing:
  - Blade, with guard thereon;
    - Monks, 138.
  - Cylinder carrying blades;
    - De Nabat and De Nabat, 171 (*App.*).
    - Bate, 162.
  - Driven by roller in contact with animal's skin;
    - Shanks, 4.
    - Bate, 162.

- Clipping and shearing—*cont.*
  - Driven by spring;
    - Clark, 12.
    - Tucker, 13.
    - Renshaw, 18.
    - Griffiths and Wishart, 19.
    - Smith, 29.
    - Reade, 46.
    - Holland, 87.
    - Wolseley, 145.
  - Driven by steam, water, compressed air, &c.;
    - Lake (*Higham*), 15.
    - Renshaw, 18.
    - Griffiths and Wishart, 19.
    - Dalrymple, 24.
    - Henderson (*Pilter*), 54.
    - Wilson, 59.
    - Johnson, (*Closson*), 83.
    - Haseltine (*Guernsey*), 108.
    - Small, 139.
    - Adie, 143.
    - Chaquette, 142.
    - Flower, 144.
    - Martin, 154.
    - Turner and Wilson, 156.
    - Bentham, 159.
    - Turquand, 162.
  - Helical blades;
    - Maynard, 175 (*App.*).
    - Tongue (*Carron*) 175 (*App.*)
    - Morl, 33.
  - Jointed blades;
    - Courtois, 128.
  - Reciprocating toothed plates;
    - Adie, 176 (*App.*).
    - Clark, 12.
    - Salom and Field, 16.
    - Adie, 17.
    - Renshaw, 18.
    - Davis, 22.
    - Tidmarsh, 27.
    - Smith, 29.
    - Lake (*Rawlings*), 30.
    - Offord, 32.
    - Clark, 34.
    - Knight, 34.
    - Hancock, 39.
    - Knight, 44.

- Clipping and shearing—*cont.*
  - Reciprocating toothed plates—*cont.*
    - Lake (*Rawlings*), 46.
    - More and Norman, 47.
    - Grayson, 51.
    - More and Norman, 51.
    - Salom, 53.
    - Flear, 59.
    - Twigg, 60.
    - Smith (*Lengelée, Bouttier, and Vincent*), 60.
    - Wallen, 76.
    - Holland, 76.
    - Price and Thomas, 77.
    - Smith (*Lengelée, Bouttier, and Vincent*), 81.
    - More and Norman, 86.
    - Holland, 87.
    - Smith, 88.
    - Fitzpatrick, 91.
    - Hunt (*Wehrlin*), 97.
    - Willis, 98.
    - Jackson, 99.
    - Norman, 104.
    - Hore, 107.
    - Bullows and Bullows, 107.
    - Clark, 107.
    - Twigg, 108.
    - Clark and Martin, 110.
    - Bétis, 110.
    - Phipps, 113.
    - Phipps, 115.
    - Gedge (*Zimmerman*), 116.
    - Plant, 117.
    - Holyoake and Brown, 119.
    - Norman, 124.
    - Bown, 126.
    - Holland, 130.
    - Martin, 131.
    - Clark, 132.
    - Martin, 133.
    - Martin, 134.
    - Couhault, 135.
    - Shelley, 145.
    - Simons and Martin, 146.
    - Laloy, 147.
    - Phipps and Burman, 148.
    - Adie, 150.
    - Courtois, 152.
    - Clark, 164.
  - Rotating discs;
    - Adie, 17.
    - Dalrymple, 24.
    - Bonneville (*Courtois*), 53.
    - Henderson, (*Pilter*), 54.
    - Drew, 82.
    - Johnson, (*Closson*), 83.
    - Holland, 87.
    - Haseltine (*Guernsey*), 108.
    - Bate, 162.
  - Shears for, manufacture of;
    - Adie, 176 (*App.*)
    - Mitchell, 15.
    - Bishop, 41.
    - Marsden, 50.

- Clipping and shearing—*cont.*
  - Shears for, manufacture of—*cont.*
    - Burgon and Ball, 53.
    - Marsden, 57.
    - Ward (*Sargeant*), 75.
    - Marsden, 79.
    - Marsden, 95.
    - Turner, 110.
    - McWilliams, 111.
    - Henderson (*Picot*), 126.
    - Haseltine (*Brown and Fulton*), 127.
    - Johnson, 130.
    - Woolhouse, 138.
    - Puente, 143.
    - Longden, 145.
  - Single blade, working over comb plate;
    - Lake (*Rawlings*), 30.
    - Offord, 32.
    - Knight, 44.
    - Lake (*Rawlings*), 46.
    - Smith (*Lengelée, Bouttier, and Vincent*), 60.
    - Hunt (*Wehrlin*), 97.
    - Vaughan (*Scheidecker*), 106.
    - Holyoake and Brown, 119.
    - Bossert (*Holder and Stole*), 136.
    - Turquand, 162.
- Compounding apparatus for sheep dressings, &c.:
    - Girdwood, 27.
- Dips, sheep. *See* Washes, &c.
- Disinfecting stables, cattle sheds, &c.:
    - Gray, 175 (*App.*).
    - Bonneville (*Werchin*), 5.
    - Hunt (*Reynoso*), 137.
- Dressings, sheep. *See* Washes, &c.
- Electricity and magnetism, applied to curative purposes:
    - Darlow, 95.
    - Grigg, 106.
    - Lyon, 129.
    - Wetton, 150.
    - Lyon, 151.
    - Monckton, 166.
- Electrified baths. *See* Baths.
- Embrocation for horses' legs:
    - Pellman, 117.
- Enema:
    - Blundell, 113.

Feet, measuring horses':
- Clark (*Clément*), 7.
- Heywood, 156.

Feet, shoes for diseased. *See* Shoes, horse.

Fomenting. *See* Bathing, &c.

Food, medicated:
- Henri, 170 (*App.*).
- Morrison, 170 (*App.*).
- Mitchell, 6.
- Welton, 10.
- Spratt, 25.
- Welton, 37.
- Valleton and Planque, 100.
- Simpson, 111.
- Hunt (*Reynoso*), 124.

Foot-rot, foot and mouth disease, &c., treatment of. *See also* Washes, &c.
- Woolrich, 3.
- Atkinson, 84.
- Robbe (*Brunet*), 101.
- Goulstone, 120.
- Foulkes (*Foulkes*), 150.
- Finney, 152.

Frogs, pad for. *See* Shoes, horse.

Frost shoes. *See* Roughing, &c.

Grinding clippers:
- Haseltine (*Guernsey*), 108.

Gutta percha for shoes. *See* Shoes, horse.

Hoofs, treatment of:
- Edwards, 1.
- Johnson (*Lebacq*), 21.
- Cottam, 23.
- Guérin, 98.
- Lebacq, 100.
- Clark (*Shepard*), 159.

Horse clippers. *See* Clipping and shearing.

Horse shoes. *See* Shoes, horse.

Hydropathic treatment of animals. *See* Bathing, &c.

Hygienic compound:
- Hunt (*Reynoso*), 121.

India-rubber for shoes. *See* Shoes, horse.

Injection, appliance for administering:
- Blundell, 113.

Instruments, surgical:
- Thompson, 111.

Leather shoes. *See* Shoes, horse.

Liniment:
- Atkinson, 84.

Lotion for horses' legs:
- Sellman, 117.

Machinery for making horse-shoes. *See* Shoes, horse.

Machinery for making nails. *See* Nails, &c.

Magnetism. *See* Electricity.

Measuring horses' feet:
- Clark (*Clément*), 7.
- Heywood, 156.

Medicated baths. *See* Bathing, &c.

Medicated food. *See* Food, &c.

Medicated harness, clothing, &c.:
- Leonard, 20.
- Brewer (*Edard and Bazault*), 79.
- Curtis, 81.
- Darlow, 95.
- Tongue (*Curtis and Gilman*), 128.
- Lyon, 129.
- Dale, 151.

Medicine, apparatus for administering:
- Edmonds, 32.
- Overman, 69.
- Bentley, 78.
- Arnold, 91.
- Durant, 114.

Medicines, substances impregnated with:
- Willson, 37.
- Winship, 45.

Nails, horse-shoe:
- Forming calks or roughs;
  - Lake (*Alden*), 103.
  - Elliot, 119.
- Machinery for making;
  - De Nabat and De Nabat, 171 (*App.*).
  - Wickens (*Wickenham*), 174 (*App.*).
  - Huggett and Huggett, 9.
  - Lake (*Putnam*), 18.
  - Price, 30.
  - Lake (*Polsey and Chase*), 36.
  - Hughes (*Griffing*), 38.
  - Newton (*Kingsland*), 48.
  - Huggett and Huggett, 49.
  - Clark (*Dodge*), 61.
  - Newton (*Schlesinger*), 64.
  - Newton (*Barnes*), 70.
  - Haseltine (*Mulholland*), 71.
  - Kelley, 85.
  - Clark (*Wills and Kingsland*), 89.
  - Johnson (*Whipple and Whipple*), 90.
  - Brown (*Fuller*), 92.
  - Morgan-Brown (*Fuller*), 97.
  - Morgan-Brown (*Fuller*), 98.
  - Huggett and Huggett, 101,
  - Haseltine (*National Horse-nail Co.*), 120.
  - Purdie, 138.
  - Huggett, 139.
  - Heard, 143.
  - Haddan (*Wills*), 160.
  - Andrews, 161.
- Making of malleable cast-iron;
  - Mackley, 132.
- Making of steel;
  - Haseltine (*Mulholland*), 71.
  - Huggett, 139.
- With shoulder for securing pad to shoe;
  - Prince and Blakemore, 92.

Ointments, sheep. *See* Washes, &c.

Pad, fitting to foot. *See* Shoes, horse.

Paper, medicated:
- Winship, 45.

Pleuro-pneumonia, treatment of:
- Atkinson, 84.

Purifying air:
- Hunt (*Reynoso*), 137.

Rasps for rasping hoofs:
- Cottam, 23.

Roughing horse shoes, methods of:
- Grooves, studs, &c. formed on shoe;
  - Walkeer and Walker, 10.
  - Palmer, 11.
  - Dufilhol, 14.
  - Gray, 17.
  - Ashton, 20.
  - Johnson (*Lebacq*), 21.
  - Mallard (*Mallard, Guerriéro and Isabel*), 31.
  - Badiou and Bernard, 47.
  - Cockburn, 57.
  - Hunt, 69.
  - Adams and Greenwood (*Adams*), 70.
  - Howard, 72.
  - Crossman and Ferguson, 78.
  - Upton, 80.
  - Beeson, 84.
  - Ellis, 86.
  - Lebacq, 92.
  - Guérin, 98.
  - Hill, 99.
  - Lebacq, 100.
  - Haggett, 109.
  - Touaillon (*Guerriero*), 112.
  - Gardner, 121.
  - Aris, 125.
  - Hunt (*Sibut*), 126.
  - Thuillard, 127.
  - Marsden, 136.
  - Haseltine (*Dunning and George*), 133.
  - Price and Price, 153.
  - Swain and Chamberlain, 153.
  - Heywood, 156.
  - Lake (*Greenwood and Clarke*), 157.
- Pins or spikes set in india-rubber, wood, &c.;
  - Marchant and Angell, 95.
  - Lancaster, 124.
  - Swain and Chamberlain, 153.
- Plates, frames, bolts, &c., attached to shoe and carrying spikes or studs.
  - Abel (*Dominick*), 1.
  - French, 7.
  - Abel (*Dominick*), 7.
  - Thompson, 22.
  - Chiswell, 27.
  - Simons, 28.
  - Holder and Dover, 28.
  - Robertson, 56.
  - Cockburn, 57.
  - Nicholson and Hopkin, 62.
  - Bell, 71.
  - Ellis and Gilbert, 73.

- Roughing horse shoes, &c.—*cont.*
  - Plates, frames, &c.—*cont.*
    - Rogers, 77.
    - Ellis, 86.
    - Robertson, 103.
    - Rose, 105.
    - Durnford, 106,
    - Fryer and Hodgson, 127.
    - Brazenor, 137.
    - Smith, 158.
    - Lee, 169.
  - Roughened plate secured to shoe ;
    - Akers, 3.
  - Shoe fitted with holding pieces of softer material ;
    - Downie and Harris, 35.
    - Downie and Harris, 40.
    - Couper, 42.
    - Holt, 67.
    - Saunders, 79.
    - Fryer and Steers, 82.
    - Sims, 84.
    - Ellis. 86.
    - McEntee, 89.
    - Clark (*Quinn*), 91.
    - Prince and Blakemore, 92.
    - Marchant and Angell, 95.
    - Hill, 99.
    - Hyatt, 116.
    - Mendel, 117.
    - Gardner, 121.
    - Lancaster, 124.
    - Turnbull, 125.
    - Winder and Pritchett, 146.
    - Gedge (*Barennes*), 151.
    - Swain and Chamberlain, 153.
  - Stud-headed nails ;
    - Elliot, 119.
  - Studs fitted in holes in shoe ;
    - Hay, 13.
    - Johnson (*Lebacq*), 21.
    - Hall, 34.
    - Carr, 68.
    - Parkin and Lewis, 83.
    - Lewis, 94.
    - Marchant, 102.
    - Le Bacq, 125.
    - Riley, 165.
    - Atkinson, 166.
  - Studs secured by nails, keys, wedges ;
    - Lake (*Shearman and O'Leary*), 6.
    - French, 7.
    - Johnson (*Lebacq*), 17.
    - Haycock and Carter, 33.
    - Rowatt, 73.
    - Rogers, 77.
    - Cardozo, 106.

- Roughing horse shoes, &c.—*cont.*
  - Studs, secured by nails, &c.—*cont.*
    - Gardner, 121.
    - Longsdon and Toppin, 141.
    - Lake (*Tevis*), 157.
    - Smith, 158.
  - Studs wedged in grooves in shoe ;
    - Lucena, 2.
    - Edwards, 14.
    - Bell, 71.
    - Greaves, 83.
    - Brown, 105.
    - Gardner, 121.
    - Swainson and Dover, 133.
- Salt-stones for animals :
  - Gedge (*Weisgerber and Schilt*), 25.
- Scab. *See* Washes, &c. Foot-rot, &c.
- Sea-sickness, preventing :
  - Brewer (*Edard and Bazault*), 79.
- Shearing sheep. *See* Clipping and shearing.
- Sheep, apparatus for applying washes, &c., to :
  - Bassett, 26.
- Sheep, holding for shearing or dipping :
  - Bassett, 26.
  - Chaquette, 142.
  - Turquand, 149.
- Sheep shearing. *See* Clipping and shearing.
- Sheep, washes, dips, dressing, ointments, &c. for. *See* Washes, &c.
- Shoes, horse. *See also* Roughing horse shoes, &c. :
  - Adapting for roughing ;
    - Lucena, 2.
    - Akers, 3.
    - Walker and Walker, 10.
    - Palmer, 11.
    - Hay, 13.
    - Edwards, 14.
    - Johnson (*Lebacq*), 21.
    - Simons, 28.
    - Hall, 34.

Shoes, horse—*cont.*

- Adapting for roughing—*cont.*
  - Robertson, 56.
  - Bell, 71.
  - Rowatt, 73.
  - Rogers, 77.
  - Greaves, 83.
  - Beeson, 84.
  - Sims, 84.
  - Clark (*Quinn*), 91.
  - Marchant and Angell, 95.
  - Hill, 99.
  - Marchant, 102.
  - Gardner, 121.
  - Brazenor, 137.
  - Longsdon and Topping, 141.
  - Lawsley, 155.
- Calks for;
  - Lake (*Shearman and O'Leary*), 6.
  - Bell, 71.
  - Upton, 80.
  - Haseltine (*Dunning and George*), 133.
  - Wing, 140.
  - Lake (*Tevis*), 157.
  - Smith, 158.
  - Atkinson, 166.
- Casting;
  - Ivory, 128.
  - Haseltine (*Dunning and George*), 133.
  - Macintosh, 136.
  - Gedge (*Barennes*), 151.
- Chilling or case-hardening;
  - Macintosh, 136.
- Composition;
  - Steers and Druce, 129.
  - Baker, 129.
  - Whiteford, 162.
- Fitting pad to;
  - Edwards, 1.
  - Mulliner, 2.
  - Haseltine (*Adlam*), 3.
  - Akers, 3.
  - McKenny, 29.
  - Downie and Harris, 35.
  - Downie and Harris, 40.
  - Robertson, 56.
  - Walker, 64.
  - Carr, 68.
  - Sims, 84.
  - Clinch, 85.
  - Marchant, 102.
  - Durnford, 106.
  - Lake (*Moran and Moran*), 112.
  - Lancaster, 124.
  - Wing, 140.
  - Winder and Pritchett, 146.
  - Wirth (*Continental Caoutchouc and Gutta Percha Cie.*). 146.
  - Johnson, 154.
  - Jarvis, 167.

Shoes, horse—*cont.*

- Fitting to shape of foot;
  - Clark (*Clément*),
  - Roberge, 37.
- For diseased feet;
  - Roberge, 37.
  - Clark (*Quinn*), 91.
  - Lee, 169.
- India-rubber and gutta-percha;
  - Trench and Warner, 47.
  - Harris, 72.
  - Clark (*Quinn*), 91.
  - Ellis, 96.
  - Steers and Druce, 129.
  - Baker, 129.
  - Whiteford, 162.
  - Lee, 169.
- India-rubber and metal combined;
  - Downie and Harris, 35.
  - Downie and Harris, 40.
  - Couper, 42.
  - Kidd, 66.
  - Ellis, 86.
  - Clark (*Quinn*), 91.
  - Cooke, 137.
  - Whiteford, 162.
  - Lee, 169.
- Jointed;
  - Simons, 28.
  - Gedge (*Peillard*), 50.
  - Pringle, 74.
  - Upton, 80.
  - Rose, 105.
  - Brazenor, 137.
  - Johnson, 155.
- Leather;
  - Ellis, 86.
  - Ellis, 96.
  - Steers and Druce, 129.
  - Yates, 133.
  - Yates, 147.
  - Whiteford, 162.
- Machinery for making;
  - Davies, 13.
  - Cottam, 23.
  - Newton (*Montgomery*), 42.
  - Lake (*Howe*), 43.
  - Badiou and Bernard, 47.
  - Shanks, 55.
  - Walker, 63.
  - Fletcher, 65.
  - Ré, 103.
  - Hunt (*Hawes*), 118.
  - Lake (*Rhode Island Horseshoe Co.*), 122.
  - Hughes (*Wheeler*), 123.
  - Horsfall and Greenwood, 131.
  - Lake (*Russell*), 140.
  - Pilté, 148.
  - Wise (*Burden*), 158.

Shoes, horse—*cont.*

- Machinery for making—*cont.*
  - Flagler and Very (*Batchelder*), 163.
  - Mearns, Wandless, and Charlton, 165.
  - Haslam and Judge, 167.
  - Martin and Robertson, 168.
- Parkesine;
  - Lewthwaite, 16.
- Rolling blanks for;
  - Gray, 17.
  - Cottam, 23.
  - Newton (*Montgomery*), 42.
  - Busk (*Youle*), 52.
  - Cottam, 58.
  - Gedge (*Sibut*), 66.
  - Wise (*Kastner*), 76.
  - Haggett, 109.
  - Hunt (*Sibut*), 126.
  - Marsden, 135.
  - Miller and Raine, 135.
  - Pilté, 148.
  - Gedge (*Barennes*), 151.
  - Price and Price, 153.
  - Heywood, 156.
  - Lake (*Greenwood and Clarke*), 157.
  - Martin and Robertson, 168.
- Securing by cement;
  - Dufilhol, 14.
  - Johnson (*Lebacq*), 21.
  - Steers and Druce, 129.
  - Baker, 129.
- Securing by clamps, bands, screws, straps, springs, &c.;
  - Walker and Walker, 10.
  - Philcox, 11.
  - Johnson (*Lebacq*), 21.
  - Roberts, 24.
  - Simons, 28.
  - Carr, 68.
  - Crossman and Ferguson, 74.
  - Crossman and Ferguson, 78.
  - Upton, 80.
  - Ellis, 96.
  - Marchant, 102.
  - Robertson, 103.
  - Rose, 105.
  - Lake (*Moran and Moran*), 112.
  - Yates, 122.
  - Wing, 140.
  - Johnson, 154.
- Special forms of;
  - Palmer, 11.
  - Dufilhol, 14.
  - Johnson (*Lebacq*), 21.
  - Hedley, 37.
  - Roberge, 37.
  - Downie and Harris, 40.

Shoes, horse—*cont.*

- Special forms of—*cont.*
  - Newton (*Montgomery*), 42.
  - Busk (*Youle*), 52.
  - Cockburn, 57.
  - Hunt (*Cate*), 69.
  - Adams and Greenwood, (*Adams*), 70.
  - Guérin, 98.
  - Hill, 99.
  - Heywood, 156.
- Steel-faced;
  - Newton (*Montgomery*), 42.
  - Hodge, Hengst, and Wilson, 48.
  - Crossman and Ferguson, 78.
- Temporary. *See also* Shoes, securing by clamps, &c.;
  - Simons, 28.
  - Ellis, 96.
  - Robertson, 103.
  - Rose, 105.
- Wearing plates, surfaces, or parts for;
  - Mulliner, 2.
  - Akers, 3.
  - Philcox, 11.
  - Cottam, 23.
  - Kidd, 66.
  - Colls, 75.
  - Rogers, 77.
  - Crossman and Ferguson, 78.
  - Ellis, 86.
  - Robertson, 103.
  - Wightman, 105.
  - Brown, 105.
  - Durnford, 106.
  - Touaillon (*Guerriéro*), 112.
  - Yates, 122.
  - Fryer and Hodgson, 127.
  - Wing, 140.
  - Winder, 146.
  - Riley, 165.
- With serrated or roughened tread surfaces;
  - Walker and Walker, 10.
  - Palmer, 11.
  - Dufilhol, 14.
  - Gray, 17.
  - Ashton, 20.
  - Johnson (*Lebacq*), 21.
  - Mallard (*Mallard, Guerriéro, and Isabel*), 31.
  - Badiou and Bernard, 47.
  - Cockburn, 57.
  - Hunt, 69.
  - Adams and Greenwood (*Adams*), 70.
  - Howard, 72.
  - Crossman and Ferguson, 78.
  - Beeson, 84.

Shoes, horse—*cont.*
  With serrated or roughened tread surfaces—*cont.*
    Ellis, 86.
    Lebacq, 92.
    Guérin, 98.
    Hill, 99.
    Lebacq, 100.
    Haggett, 109.
    Touaillon (*Guerriéro*), 112.
    Gardner, 121.
    Aris, 125.
    Hunt (*Sibut*), 126.
    Thuillard, 127.
    Marsden, 135.
    Price and Price, 153.
    Swain and Chamberlain, 153.
    Heywood, 156.
    Lake (*Greenwood and Clarke*), 157.
  With tread surfaces of india-rubber, gutta-percha, wood, lead, felt, &c.;
    Downie and Harris, 35.
    Downie and Harris, 40.
    Couper, 42.
    Holt, 67.
    Saunders, 79.
    Fryer and Steers, 82.
    Sims, 84.
    Clinch, 85.
    Ellis, 86.
    McEntee, 89.
    Clark (*Quinn*), 91.
    Prince and Blakemore, 92.
    Marchant and Angell, 95.
    Hill, 99.
    Hyatt, 116.
    Mendel, 117.
    Gardner, 121.
    Lancaster, 124.
    Turnbull, 125.
    Winder and Pritchett, 146.
    Gedge (*Barennes*), 151.
    Swain and Chamberlain, 153.
    Atkinson, 166.

Singeing:
    Taylor and Davies, 52.

Slipping, preventing. *See* Roughing.

Smears, sheep. *See* Washes, &c.

Soap, disinfecting:
    Bonneville (*Werchin*), 5.

Stockings for horses' legs. *See* Boots.

Surgical instrument:
    Thompson, 111.

Syringe:
    Blundell, 113.

Throwing horses and cattle:
    Cunningham, 31.

Vapour baths. *See* Bathing, &c.

Vermin, destroying. *See also* Washes, &c.
    McDougall, 173 (*App.*).
    Price and Rowe, 16.
    McDougall, 131.
    McLeod, 144.

Washes, dips, smears, dressings, &c. for sheep:
    McDougall, 173 (*App.*).
    Fell, 8.
    Girdwood, 9.
    Girdwood, 27.
    Simpson, 40.
    Williams, 62.
    Campbell, 66.
    Reid, 74.
    Atkinson, 84.
    Robbe (*Brunet*), 101.
    Ivison, 109.
    Goulstone, 120.
    McDougall, 131.
    McLeod, 144.
    Foulkes (*Foulkes*), 150.
    Finney, 152.
    Little, 155.
    Grier, 164.
    Caldwell, 164.

Washes, &c.:
  Apparatus for applying;
    Bassett, 26.
  Apparatus for compounding;
    Girdwood, 27.

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V.

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Ashby-de-la-Zouch (*Mutual Improvement Society*).
Ashton-under-Lyne, (*Mechanics' Institution*).
Aston, near Birmingham (*Aston Manor Public Library*).
Aylesbury (*Kingsbury Mechanics' Institute*).
Bacup (*Mechanics' Institution*).
Banbridge (*Literary and Mutual Improvement Society*).
Banbury (*Mechanics' Institution*).
Barnstaple (*Literary and Scientific Institution*).
Barrow-in-Furness (*Barrow Working Men's Club and Institute*).
Basingstoke (*Mechanics' Institute and Club*).
Bath (*Athenæum*).
——- (*City Free Library*).
——- (*Royal Literary and Scientific Institution*).
Batley (*Mechanics' Institution*).
Battle (*Young Men's Christian Association*).
Belfast (*Athenæum*).
——— (*Northern Law Club*).
——— (*People's Literary Institute*).
Berkhampstead, Great (*Mechanics' Institute*).
——————— (*Working Men's College*).
Birkenhead (*Literary and Scientific Society*).
Birmingham (*Bloomsbury Institution*).
————— (*Central Lending Library*).
————— (*Free Library and News Room, Gosta Green.*)
————— (*Graham Street Institution*).
Bodmin (*Literary Institution*).
Bolton (*Mechanics' Institute*).
————(*School of Art*).
Bournemouth (*Library and Reading Room*).
Bradford, Yorkshire (*Church Institute*).
————————— (*Library and Literary Society*).
————————— (*Mechanics' Institute*).
Braintree (*Braintree and Bocking Literary and Mechanics' Institution*).
Brampton, near Chesterfield (*Local Museum and Literary Institute*).
Breage, Cornwall (*Institution*).
Brigg, Lincolnshire (*Reading Society*).
Bristol (*Athenæum*).
———- (*Institution*).
———- (*Law Library Society*).
———- (*Museum and Library, Queen's Road*).
Bromsgrove (*Literary and Mechanics' Institute*).
Burnley (*Literary Institution*).
———— (*Mechanics' Institution*).
Burslem (*Wedgwood Institute*).
Bury (*Athenæum*).
Bury St. Edmund's (*Athenæum*).
————————— (*Mechanics' Institution*).
Calne (*Literary Institution*).
Canterbury (*Westgate Towers*).
Carharrack (*Literary Institute*).
Carmarthen (*Literary and Scientific Institution*).
Cheddar (*Literary Institution*).
Cheltenham (*Permanent Library*).
Chertsey (*Literary and Scientific Institution*).
Chester (*City Library and Reading Room*).
Chesterfield (*Mechanics' Institution*).
Chichester (*Literary Society and Mechanics' Institute*).
Chippenham (*Literary and Scientific Institution*).
Christchurch (*Working Man's Institute*).
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Coggeshall (*Literary and Mechanics' Institution*).
Colchester (*Literary Institution*).
——— (*Young Men's Christian Association*).
Compstall (*Athenæum*).
Coventry (*Free Library*).
———— (*Institute*).
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Crewe (*Mechanics' Institution*).
Deal (*Deal and Walmer Institute*).
Derby (*Mechanics' Institution*).
Devonport (*Mechanics' Institute*).
Dewsbury (*Mechanics' Institution*).
Diss (*Reading Room and Library*).
Doncaster (*Free Library*).
————— (*Great Northern Mechanics' Institute*).
————— (*Young Men's Christian Association*).
Dorchester (*County Museum and Library*).
—————(*Working Men's Institute*).
Dudley (*Mechanics' Institution*).
Dukinfield (*Village Library and Reading Room*).
Dumbarton (*Philosophical and Literary Society*).
Dumfries (*Mechanics' Institution*).
Dundee (*Young Men's Christian Association and Literary Institution*).

Durham (*Mechanics' Institute*).
Eagley, Bolton-le-Moors (*Library and Institute*).
Ealing (*Mechanics' Institute*).
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——— (*Watt Institution and School of Art*).
——— (*Working Men's Club*).
Egham (*Literary Institute*).
Egremont (*Mechanics' Institute*).
——— (*Workmen's Institute*).
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——— (*Devon and Exeter Institution*).
Farnham (*Young Men's Association*).
Faversham (*Institute*).
Fowey (*Working Men's Reading Rooms*).
Frome (*Literary and Scientific Institution*).
——— (*Mechanics' Institution*).
Gainsborough (*Literary, Scientific and Mechanics' Institute*).
Garforth, near Leeds (*Working Men's Club*).
Glasgow (*Athenæum*).
——— (*Central Working Men's Club and Institute*).
——— (*City Industrial Museum, Kelvinggrove Park*).
——— (*Institution of Engineers in Scotland*).
——— (*Mechanics' Institution, Bath Street*).
——— (*Philosophical Society*).
Glastonbury (*Literary Institute*).
Godmanchester (*Working Men's Reading Room*).
Gosport (*Gosport and Alverstoke Literary and Scientific Institution*).
Grantham (*Public Literary Institution*).
Gravesend (*Gravesend and Milton Library and Reading Rooms*).
Guernsey (*Working Men's Association*).
Guildford (*Working Men's Institution*).
Hadleigh (*The Reading Room*).
Halesworth (*Mechanics' Institute*).
Halifax (*Literary and Philosophical Society*).
——— (*Mechanics' Institute*).
——— (*Working Men's College*).
Halstead (*Literary and Mechanics' Institute*).
Haslingdon (*Institute*).
Hastings (*Literary and Scientific Institute*).
——— (*Mechanics' Institution*).
Hawarden (*Literary Institution*).
Hebden Bridge, near Todmorden (*Mechanics' Institution*).
Helston (*Reading Room and Library*).
Hemel Hempsted (*Mechanics' Inst.*).
Hereford (*Natural History, Philosophical, Antiquarian, and Literary Society*).
Hertford (*Literary and Scientific Institution*).
Heywood (*Mechanics' Institute*).
Hitchin (*Mechanics' Institute*).
Holbeck (*Mechanics' Institution*).
Hollingwood (*Working Men's Club*).
Holt, Norfolk (*Literary Society*).
Holywell Green (*Mechanics' Institution*).
Horncastle (*Mechanics' Institution*).
Huddersfield (*Mechanics' Institution*).
Hull (*Church Institute*).
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Huntingdon (*Literary and Scientific Institution*).
Ipswich (*Working Men's College*).
Kendal (*Christian and Literary Institute*).
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Leeds (*Chapeltown Branch Library*).
——— (*Church Institute*).
——— (*Holbeck Branch Library*).
——— (*Hunslet Branch Library*).
——— (*Leeds Library*).
——— (*Mechanics' Institution and Literary Society*).
——— (*Philosophical and Literary Society*).
——— (*Working Men's Institute*).
——— (*Young Men's Christian Association*).
Leek, Staffordshire (*Literary and Mechanics' Institution*).
Leicester (*Law Society*).
——— (*Young Men's Christian Association*).
Leighton Buzzard (*Working Men's Mutual Improvement Society*).
Leith (*Mechanics' Subscription Library*).
Lewes (*Fitzroy Memorial Library*).
——— (*Mechanics' Institute*).
——— (*School of Science and Art*).
Lincoln (*Mechanics' Institute*).
Liverpool (*Institute*).
——— (*Medical Institution*).
——— (*Polytechnic Society*).
Llanelly (*Chamber of Commerce and Reading Room*).
Lockwood (*Mechanics' Institution*).
London (*Bank of England Library and Literary Association*).
——— (*Beaumont Institute, Mile End*).
——— (*Bedford Working Men's Institute, Spitalfields*).

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——— (*Bow and Bromley Institute, Bow Road*).
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——— (*Hackney Working Men's Club*).
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Lye (*Institution*).
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Maidstone (*St. Paul's Literary Institute*).
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Manchester (*Ancoats Branch Free Library*).
——— (*Campfield Free Lending Library*).
——— (*Cheetham Branch Library*).
——— (*Chorlton and Ardwick Branch Free Library*).
——— (*Hulme Branch Free Library*).
——— (*Law Library*).
——— (*Mechanics' Institution*).
———(*Natural History Museum, Peter Street*).
——— (*Owen's College*).
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——— (*Rochdale Road Branch Free Library*).
——— (*Royal Exchange Library*).
——— (*Scientific and Mechanical Society*).
Manningtree (*Manningtree and Mistley Literary and Scientific Institution*).
Mansfield (*Co-operative Industrial Society*).
——— (*Mechanics', Artizans', and Apprentices' Library*).
——— (*Mechanics' Institute*).
Marlborough (*Reading and Mutual Improvement Society*).
——— (*Working Men's Hall*).
Melton Mowbray (*Literary Institute*).
Mere, near Bath (*Literary Association*).
Middlesborough (*Iron and Steel Institute*).
——— (*Mechanics' Institution*).
Middlewich (*Literary and Scientific Institution*).
Mildenhall (*Suffolk Library Inst.*).
Modbury (*Mechanics' Institution*).
Morley, Yorkshire (*Young Men's Christian Association*).
Newark (*Mechanics' Institute*).
Newbury (*Literary and Scientific Institution*).
Newcastle-upon-Tyne (*Mechanics' Institution*).
——— (*Working Men's Club*).
New Mills, near Stockport (*Mechanics' Institute*).
Newport, Isle of Wight (*Young Men's Society and Reading Room*).
Northampton (*Mechanics' Institute*).
North Shields (*Free Library*).
Nottingham (*Mechanics' Institution*).
——— (*Subscription Library, Bromley House*).
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——— (*Penzance Library*).
———(*Working Men's Association*).
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Plymouth (*Working Men's Institute*).
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——— (*Mechanics' Institute*)
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St. Leonards (*Mechanics' Institution*).
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Skipton, Yorkshire (*Mechanics' Institute*).
Slough (*Mechanics' Institute*).
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Southampton (*Polytechnic Institution*).
———— (*Workmen's Hall*).
South Shields (*Public Free Library*).
Southwell (*Literary Institution*).
Spalding (*Christian Young Men's Association*).
———— (*Mechanics' Institute*).
Stafford (*Mechanics' Institution*).
Staines (*Mechanics' Institute*).
Stalybridge, Cheshire (*Mechanics' Institution*).
Stamford (*Institution*).
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Stourbridge (*Associated Institute*).
———— (*Church of England Association.*)
———— (*Iron Works Reading Room and Library.*)
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———— (*Working Men's Institute*).
Stowmarket (*Literary Institution*).
Stratford (*Working Men's Hall*).
Sudbury, Suffolk (*Literary and Mechanics' Institute*).
Surbiton (*Reading Room and Literary Institute*).
Swansea (*Royal Institution of South Wales*).
———— (*South Wales Institute of Engineers*).
Swansea (*Working Man's Inst.*).
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———— (*Institution*).
———— (*Royal Institution of Cornwall*).
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———— (*Mechanics' Institute*).
Tunbridge Wells (*Mechanics' Institution*).
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West Bromwich (*Free Library*).
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Whitby (*Institute*).
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———— (*Subscription Library*).
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Whitstable (*Institute*).
Wilton (*Literary Institute*).
Winchester (*Mechanics' Institution*).
———— (*Training College*).
Winsford (*Town Hall Reading Room*).
Wirksworth (*Mechanics' Institution*).
Wisbeach (*Mechanics' Institute*).
Witham (*Literary Institution*).
Witney (*Athenæum*).
Wolverhampton (*Law Library*).
———— (*Library*).
Wolverton (*Institute*).
Woodbridge (*Literary and Mechanics' Institute*).
Worcester (*Railway Literary Institute*).
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Abridgments of Specifications.

The following is a KEY to the classes already published. The numbers refer to the list of Abridgments on pages 4, 5, 6, and 7, where the full titles, prices, &c., are given :—

A.

Accordions. *See* Music, &c., 26.
Accoutrements. *See* Fire-arms, &c., 10.
Acetic acid. *See* Acids, 40.
Acids, &c., 40.
Aerated liquids. *See* Unfermented beverages, &c., 86.
Aerating water. *See* Purifying, &c., water, 79.
Aeronautics, 41.
Ageing fabrics. *See* Bleaching, &c., 14.
Agricultural engines. *See* Steam engine, 49.
Agriculture—barn and farmyard implements (including the cleansing, drying, and storing of grain), 82.
Agriculture—field implements and processes, 81.
Agriculture, steam. *See* Steam culture, 8.
Air, &c., engines, 62.
Air guns. *See* Fire-arms, &c., 10.
Air pumps of steam engines. *See* Steam engine, 49.
Alarum clocks. *See* Watches, &c., 9.
Alarums, electric. *See* Electricity, 15, 94.
Alarums, fire. *See* Fire engines, &c., 88.
Alarums, gas. *See* Gas, 17.
Albums. *See* Photography, 19; Books, 43.
Alkalies. *See* Acids, &c., 40.
Alloys. *See* Metals, &c., 18.
Alum. *See* Acids, &c., 40.
Alumina. *See* Acids, &c., 40.
Aluminium. *See* Metals, &c., 18; Acids, &c., 40.
Amalgamating metals. *See* Metals, &c., 18.
Ambulances. *See* Medicine, &c., 25.
Ammonia. *See* Acids, &c., 40.
Ammonium. *See* Acids, &c., 40.
Ammunition. *See* Fire-arms, &c., 10.
Anchors, 69.
Anchors for steam ploughing. *See* Agriculture, 81.
Anemometers. *See* Optical, &c., 76.
Aniline. *See* Bleaching, &c., 14.
Animal charcoal. *See* Sugar, 48.
Animals, medical and surgical treatment of. *See* Farriery, &c., 53.
Annealing furnaces. *See* Fuel, &c., 30.
Anthracite furnaces. *See* Fuel, &c., 30.
Antimony. *See* Metals, &c., 18; Acids, &c., 40.
Aqueducts. *See* Bridges, &c., 36.
Arches. *See* Bridges, &c., 36.
Armour plates, rolling. *See* Iron and Steel, 6.
Armour plates, shaping. *See* Shipbuilding, 21.
Arsenic. *See* Metals, &c., 18; Acids, &c., 40.
Arsenic acid and arsenious acid. *See* Acids, 40.
Artificial leather, 80.
Artists' instruments, &c., 54.
Asphalte. *See* Roads, &c., 35.
Astronomical instruments. *See* Optical, &c., 76.
Avellers. *See* Agriculture, 82.
Axles, axletrees, and axle-boxes, for railway carriages, &c., *See* Carriages for railways, 46; Steam engine, 49.

B.

Bagatelle tables. *See* Toys, &c., 51.
Bags. *See* Trunks, &c., 84.
Bags, paper, *See* Cutting, &c., 12.
Balances. *See* Raising, &c., 31.
Balancing, &c. millstones. *See* Grinding grain, 78.
Balloons. *See* Aeronautics, 41.
Balloons, toy. *See* Toys, 51.
Balls. *See* Toys, 51.
Band boxes. *See* Trunks, &c., 84.
Bands and belts. *See* Wearing apparel, 66.
Barium. *See* Acids, &c., 40.
Barley hummellers. *See* Agriculture, 82.
Barley mills. *See* Grinding grain, 78.
Barometers. *See* Optical, &c., 76.
Barrels, 74.
Baryta. *See* Acids, &c., 40.
Baskets. *See* Trunks, &c., 84.

Baths for medical use. *See* Medicine, &c., 25.
Bayonets. *See* Fire-arms, &c., 10.
Beacons. *See* Harbours, &c., 77.
Beads. *See* Wearing apparel, 68.
Beds and bedsteads. *See* Furniture, 39.
Beds and bedsteads for invalids. *See* Medicine, &c., 25; Furniture, 39.
Beer engines. *See* Hydraulics, 32.
Beetling. *See* Dressing, &c., 91.
Bellows. *See* Fuel, &c., 30.
Bells. *See* Music, &c., 26.
Belts, surgical. *See* Medicine, &c., 25.
Beverages, unfermented, 86.
Billiards. *See* Toys, &c., 51.
Bins for corn, &c. *See* Agriculture, 82.
Biscuits. *See* Cooking, 61.
Biscuit ware. *See* Pottery, 24.
Bismuth. *See* Acids, &c., 40.
Bits. *See* Saddlery, 34.
Blacking. *See* Skins, &c., 55; Wearing apparel, 67.
Blast furnaces. *See* Iron and steel, 6; Fuel, &c., 30.
Bleaching, &c., fabrics, 14.
Bleaching fibrous substances. *See* Paper 11; Spinning, 28.
Blinds. *See* Furniture, 39.
Blinds, ventilating. *See* Ventilation, 52.
Blocks. *See* Raising &c., 31.
Boas. *See* Wearing apparel, 66.
Boat-building. *See* Ship-building, 21.
Boats, raising and lowering. *See* Raising, &c., 31; Masts, &c., 73.
Bobbin net. *See* Lace-making, 29.
Boiler plates. *See* Iron and steel, 6.
Boiler tubes. *See* Metallic pipes, 70.
Boilers of steam engines. *See* Steam engine, 49.
Bolting, &c., flour. *See* Grinding grain, 78.
Bolts. *See* Locks, &c., 60.
Bolts. *See* Nails, &c., 58.
Bonnet boxes. *See* Trunks, &c., 84.
Bonnets and bonnet boxes. *See* Wearing apparel, 65.
Books, &c., 43.
Boot-cleaning machines. *See* Brushing, 57.
Boot hooks. *See* Wearing apparel, 67.
Boot jacks. *See* Wearing apparel, 67.
Boots. *See* Wearing apparel, 67.
Boracic acid. *See* Acids, 40.
Bottling. *See* Preparing, &c., cork, &c., 56.
Boxes for pens, leads, &c. *See* Writing, 37.
Boxes. *See* Trunks, &c., 84.
Bracelets. *See* Wearing apparel, 68.
Braces. *See* Wearing apparel, 66.
Braid. *See* Lace-making, 29.
Brakes. *See* Carriages for railways, 46; Steam-engine, 49; Mining, 71.
Brass. *See* Metals, &c., 18.
Bread-making. *See* Cooking, &c., 61.
Breakfast powders. *See* Tea, &c., 87.
Breakwaters. *See* Harbours, &c., 77.
Breast pins. *See* Wearing apparel, 68.
Breast-plates. *See* Fire-arms, &c., 10.
Breeches. *See* Wearing apparel, 66.
Bricks and tiles, 22.
Bricks, ventilating. *See* Ventilation, 52.
Bridges, &c., 36.
Broadshares. *See* Agriculture, 81.
Bromine. *See* Acids, &c., 40.
Brooches. *See* Wearing apparel, 68.
Bruising mills for beans, grain, gorse, &c. *See* Agriculture, 82.
Brushes for artists. *See* Artists' instruments, 54; Brushing, 57.
Brushing, &c., 57.
Buckles. *See* Wearing apparel, 68.
Buffers. *See* Carriages, &c., for railways, 46.
Bugles. *See* Music, &c., 26.
Bullet-making machines. *See* Fire arms, &c., 10.
Bungs. *See* Preparing and cutting cork, 56.
Buoys. *See* Harbours, &c., 77.
Bustles. *See* Wearing apparel, 66.
Buttons. *See* Wearing apparel, 68.

C.

Cable stoppers. *See* Raising, &c., 31.
Cables, telegraphic. *See* Electricity, 15.
Caddies. *See* Trunks, &c., 84.
Cadmium. *See* Acids, &c., 40.
Cages, miners' safety. *See* Mining, 71.
Caissons. *See* Harbours, &c., 77.
Cake breakers. *See* Agriculture, 82.
Calcining furnaces. *See* Metals, &c., 18; Fuel, &c., 30.
Calcium. *See* Acids, &c., 40.
Calculating machines. *See* Optical, &c., 76.
Calendering. *See* Dressing and finishing, &c., 91.
Calico, bleaching, dyeing, and printing, 14.
Cameras. *See* Photography, 19; Optical, &c., 76.
Canal navigation. *See* Marine propulsion, 5.
Canals. *See* Harbours, &c., 77.
Candles. *See* Oils, &c., 27.
Candlesticks. *See* Lamps, &c., 44.
Cannon. *See* Fire-arms, 10.
Canvas. *See* Weaving, 20.
Capes. *See* Wearing apparel, 66.
Caps and cap fronts. *See* Wearing apparel, 65.
Caps and capsules. *See* Preparing and cutting cork, 56.
Capstans. *See* Raising, &c., 31.
Carbon. *See* Acids, &c., 40.
Carbonic acid. *See* Acids, 40.
Cardboard. *See* Paper, 11.
Card cases. *See* Books, &c., 43.
Carding engines. *See* Spinning, 28.
Cards. *See* Cutting, &c. paper, 12; Letterpress printing, &c., 13.
Cards, playing. *See* Toys, &c., 51.
Cargoes, ventilating. *See* Fire engines, &c., 88.
Carpet bags. *See* Trunks, &c., 84.
Carpets. *See* Weaving, 20.
Carriage lamps. *See* Lamps, 44.

Carriages for guns. *See* Fire-arms, &c., 10.
Carriages for invalids. *See* Medicine, &c., 25.
Carriages, &c., for railways, 46.
Cartridges. *See* Fire-arms, &c., 10.
Cartridges, miner's. *See* Mining, 71.
Cask stands. *See* Casks, 74.
Caskets. *See* Trunks, &c., 84.
Casks, 74.
Casting metals. *See* Metals, &c., 18.
Castors. *See* Furniture, 39.
Cattle food, preparing on the farm, not manufacturing for sale. *See* Agriculture, 82.
Cattle medicines. *See* Farriery, &c., 53.
Cement, brush maker's. *See* Brushing, 57.
Centre boards. *See* Steering, 75.
Cesspools. *See* Waterclosets, &c., 63.
Chaff-cutters. *See* Agriculture, 82.
Chains, chain cables, &c., 90.
Chains, jewellery. *See* Wearing apparel, 68; Chains, &c., 90.
Chairs. *See* Furniture, 39.
Chairs, invalid. *See* Medicine, 25; Furniture, 39.
Chalybeate waters. *See* Unfermented beverages, &c., 86.
Chamber utensils. *See* Waterclosets, &c., 63.
Chandeliers. *See* Lamps, &c., 44.
Charcoal, animal. *See* Sugar, 48.
Cheese making. *See* Milking, &c., 72,
Chemises. *See* Wearing apparel, 66.
Chenille. *See* Lace-making, 29.
Chess. *See* Toys, 51.
Chests. *See* Trunks, &c., 84.
Chicory, manufacturing and preparing for sale. *See* Tea, &c., 87.
Chimneys and chimney tops. *See* Fuel, &c., 30.
Chimneys sweeping. *See* Brushing, 57.
Chinaware. *See* Pottery, 24.
Chlorine. *See* Acids, &c., 40.
Chocolate or cocoa, concentrated extracts of. *See* Tea, &c., 87.
Chocolate or cocoa, manufacturing and preparing for sale. *See* Tea, &c., 87.
Chocolate, preparing as a drink. *See* Unfermented beverages, &c., 86.
Chromium. *See* Acids, &c., 40.
Chromo-lithography. *See* Letterpress and similar printing, 13; Ornamenting paper, &c., 12.
Churning. *See* Milking, &c., 72.
Cigars, cigarettes, and cigar holders. *See* Tobacco, 42.
Cinder sifters. *See* Fuel, &c., 30.
Cisterns. *See* Hydraulics, 32.
Citric acid. *See* Acids, 40.
Clasps and clips. *See* Writing, &c., 37.
Cleaning grain. *See* Agriculture, 82.
Clinometers. *See* Optical, &c., 76.
Clipping horses. *See* Farriery, &c , 53.
Cloaks. *See* Wearing apparel, 66.
Clocks. *See* Watches, &c., 9.
Clod crushers. *See* Agriculture, 81.
Clogs. *See* Wearing apparel, 67.
Coal scuttles. *See* Fuel, &c., 30.
Coating metals. *See* Metals, &c., 18; Plating, &c., metals, 23.
Coats. *See* Wearing apparel, 66.
Cobalt. *See* Metals, 18; Acids, &c., 40.
Cocks. *See* Hydraulics, 32.
Cocoa or chocolate, concentrated extracts of. *See* Tea, &c., 87.
Cocoa or chocolate, manufacturing and preparing for sale. *See* Tea, &c., 87,
Cocoa, preparing as a drink. *See* Unfermented beverages, &c., 86.
Coffee, concentrated extracts of. *See* Tea, &c., 87.
Coffee, manufacturing and preparing for sale. *See* Tea, &c., 87.
Coffee mills. *See* Grinding grain, &c., 78
Coffee, preparing as a drink. *See* Unfermented beverages, &c., 86.
Coffer dams. *See* Bridges, 36; Harbours, &c., 77.
Coke ovens. *See* Fuel, &c., 30.
Collars. *See* Wearing apparel, 66.
Collars for horses. *See* Saddlery, 34.
Colours. *See* Paints, 50.
Colours, artists'. *See* Artists instruments, &c., 54.
Combing machines. *See* Spinning, 28.
Commodes. *See* Furniture, 39; Waterclosets, &c., 63.
Compasses, drawing. *See* Optical, &c., 76.
Compasses, magnetic. *See* Optical, &c., 76.
Compasses, mariners'. *See* Optical, &c., 76.
Concertinas. *See* Music, &c., 26.
Condensers of steam engines. *See* Steam engine, 49.
Confectionery. *See* Cooking, &c., 61.
Confectionery ices. *See* Ice-making, &c., 85.
Conveying water. *See* Hydraulics, 32.
Cooking, &c., 61.
Copper. *See* Metals, &c., 18.
Copper oxides, &c. *See* Acids, &c., 40.
Copying presses. *See* Writing, &c., 37.
Corkcutting, &c., 56.
Corkscrews. *See* Preparing and cutting cork, 56.
Corn, thrashing, cleansing, drying, and storing. *See* Agriculture, 82.
Cornets. *See* Music, 26.
Cots and cradles. *See* Furniture, 39.
Cotton gins, *See* Spinning, 28.
Couches. *See* Furniture, 39.
Couplings for tubes. *See* Metallic pipes, &c., 70.
Crab-winches, steam. *See* Raising, &c., 31; Steam engine, 49.
Cranes. *See* Raising, &c., 31.
Cranes, hydraulic. *See* Raising, &c., 31; Hydraulics, 32.
Cranes, steam. *See* Raising, &c., 31; Steam engine, 49.
Crates. *See* Trunks, &c., 84.
Cravats. *See* Wearing apparel, 66.
Crayons. *See* Artists' instruments, &c., 54.
Crayons and crayon holders. *See* Writing, &c., 37; Artists' instruments, &c., 54.

Cricket. *See* Toys, &c., 51.
Crinolines. *See* Wearing apparel, 66.
Crochet needles and holders. *See* Needles, 45.
Croquet. *See* Toys, &c., 51.
Crushing grain, &c. *See* Grinding grain, 78.
Crushing machinery for iron ores. *See* Iron and steel, 6; Metals, &c., 18.
Crushing mills for beans, gorse, grain, &c. *See* Agriculture, 82.
Cuirasses. *See* Fire-arms, &c., 10.
Cultivators. *See* Agriculture, 81.
Currycombs. *See* Saddlery, 34.
Curtains. *See* Furniture, 39.
Cutting roots, straw, &c. *See* Agriculture, 82.
Cyanogen. *See* Acids, &c., 40.

D.

Dams. *See* Harbours, &c., 77.
Dash wheels. *See* Bleaching, &c., 14.
Decoctions, unconcentrated. *See* Unfermented beverages, &c., 86.
Decorticating grain and seeds. *See* Grinding grain, 78.
Dentistry. *See* Medicine, 25.
Derricks. *See* Raising, &c., 31
Derricks, steam. *See* Raising, &c., 31; Steam engine, 49.
Desks. *See* Writing, 37.
Despatch boxes. *See* Trunks, &c., 84.
Detonating signals. *See* Railway signals, 38.
Dibbles. *See* Agriculture, 81.
Dies. *See* Ornamenting paper, &c., 12.
Diggers and digging machines. *See* Agriculture, 81.
Diving apparatus. *See* Raising, &c., 31.
Docks. *See* Harbours, &c., 77..
Dolls. *See* Toys, 51.
Door-springs. *See* Hinges, &c., 59.
Draining mines. *See* Mining, 71.
Drain pipes, laying. *See* Agriculture, 81.
Drain ploughs. *See* Agriculture, 81.
Drain tiles and pipes. *See* Drains, &c., 1.
Drains and sewers, 1.
Draughts and draughtboards. *See* Toys, 51.
Drawers. *See* Wearing apparel, 66.
Drawing instruments. *See* Writing, &c., 37; Artists', &c., 54; Optical, mathematical, &c., 76.
Dredgers, steam. *See* Steam engine, 49; Harbours, &c., 77.
Dredging. *See* Raising, &c., 31; Harbours, &c., 77.
Dress fastenings. *See* Wearing apparel, 68.
Dressing and finishing woven fabrics, &c., 91.
Dressing cases. *See* Trunks, &c., 84.
Dressing flour and meal. *See* Grinding grain, 78.
Dressing millstones. *See* Grinding grain, 78.
Drills, seed and manure. *See* Agriculture, 81.
Drums. *See* Music, &c., 26.
Dry docks. *See* Harbours, &c., 77.
Drying grain, hops, roots, hay, &c. *See* Agriculture, 82.
Dyeing. *See* Bleaching, &c., 14.
Dynamometers. *See* Optical, &c., 76.

E.

Earrings. *See* Wearing apparel, 68.
Earth closets. *See* Waterclosets, &c., 63.
Earthenware. *See* Pottery, 24.
Easels. *See* Artists' instruments, 54.
Effervescing drinks. *See* Unfermented beverages, &c., 86.
Elastic bands. *See* India rubber, 16; Lace-making, 29.
Elastic cloths. *See* Weaving, 20; Lace-making, 29.
Electric lighting, &c., 95.
Electricity, &c., 15; 92; 93; 94; 95; 96; 97.
Elevators or stackers. *See* Agriculture, 82.
Embankments. *See* Harbours, &c., 77.
Embossing. *See* Ornamenting paper, 12; Letterpress printing, 13; Dressing, &c. fabrics, 91.
Embroidering. *See* Sewing, 2.
Endless travelling railways. *See* Aids to locomotion, 7.
Engraving, embossing, and printing rollers. *See* Ornamenting paper, 12; Bleaching, &c. fabrics, 14.
Engravings. *See* Letterpress printing, &c., 13; Artists' instruments, 54.
Envelopes. *See* Cutting, folding, &c. paper, 12.
Excavating. *See* Harbours, &c., 77.
Exercises. *See* Toys, &c., 51.
Explosive compounds. *See* Fire-arms, &c., 10.
Explosive compounds for blasting. *See* Mining, &c., 71.
Extracts, unconcentrated. *See* Unfermented beverages, &c., 86.
Eyelets. *See* Wearing apparel, 68.

F.

Fan blowers. *See* Fuel, &c., 30.
Fans, rotary. *See* Ventilation, 52.
Farriery, &c., 53.
Fats. *See* Oils, &c., 27.
Feeding bottles. *See* Medicine, 25.
Feeding troughs. *See* Agriculture, 82.
Felting. *See* Dressing and finishing, &c., 91.
Field implements and processes for agriculture, 81.
Filters, water. *See* Purifying, &c. water, 79.
Filters, sugar. *See* Sugar, 48.
Finishing fabrics. *See* Dressing, &c., 91.
Fins, steering. *See* Steering, &c., 75.
Fire-arms, &c., 10.

Fire-arms, toy. *See* Toys, 51.
Fire bars. *See* Fuel, &c., 30.
Fire engines, 88.
Fire escapes, 88.
Fire extinguishers, 88.
Fire-grates. *See* Fuel, &c., 30.
Fire-proof depositories. *See* Safes, &c., 64.
Fire-proof dresses and fabrics. *See* Fire engines, &c., 88.
Fireworks. *See* Toys, 51.
Flageolets. *See* Music, &c., 26.
Flesh brushes. *See* Brushing, 57.
Floating docks. *See* Harbours, &c., 77.
Floorcloth, 80.
Flues. *See* Fuel, &c., 30.
Fluorine. *See* Acids, &c., 40.
Flutes. *See* Music, &c., 26.
Fog signals. *See* Railway signals, 38.
Folding fabrics. *See* Dressing, &c., 91.
Folding paper. *See* Cutting, &c., 12.
Food for cattle, preparing on the farm, not manufacturing for sale. *See* Agriculture, 82.
Food, preservation of, 4.
Footways. *See* Roads, &c., 35.
Fountains. *See* Hydraulics, 32.
Freezing mixtures. *See* Ice-making, &c., 85.
Frills and frillings. *See* Wearing apparel, 66.
Fringe. *See* Lace-making, &c., 29.
Fruit-cleaning machines. *See* Brushing, 57.
Fruit, machinery for paring, slicing, &c. *See* Cooking, &c., 61.
Fuel, 30.
Fulling. *See* Dressing and finishing, &c., 91.
Furnaces. *See* Iron and steel, 6; Metals and alloys, 18; Fuel, &c., 30; Steam engine, 49.
Furniture, &c., 39.
Furze crushers. *See* Agriculture, 82.
Fusees and fusee cases. *See* Tobacco, 42.
Fuses for firing blasting charges. *See* Mining, 71.

G.

Gaiters. *See* Wearing apparel, 66.
Galvanic batteries. *See* Electricity, 15; 92.
Games. *See* Toys, 51.
Garters. *See* Wearing apparel, 66.
Gas, 17.
Gas engines. *See* Air, &c., engines, 62.
Gas meters. *See* Gas, 17.
Gasometers. *See* Gas, 17.
Gas stoves. *See* Gas, 17; Fuel, &c., 30.
Gas tubes. *See* Metallic pipes, 70.
Gates, dock. *See* Harbours, &c., 77.
Gates, lock. *See* Harbours, &c., 77.
Gauges, air. *See* Ventilation, 52.
Gauges, steam. *See* Steam engine, 49.
Gauges, water. *See* Hydraulics, 32; Steam engine, 49.
Gig mills. *See* Dressing, &c., 91.
Girths. *See* Saddlery, 34.
Globes. *See* Optical, &c., 76.
Globes for lamps. *See* Lamps, 44.
Glove fastenings. *See* Wearing apparel, 68.
Gloves. *See* Wearing apparel, 66.
Gloves of thread. *See* Lace-making, 29.
Gold. *See* Metals, &c., 18; Acids, &c., 40.
Goloshes. *See* Wearing apparel, 67.
Gorse and grain crushers. *See* Agriculture, 82.
Grain, thrashing, cleansing, sorting measuring, weighing, preserving, storing, &c. *See* Agriculture, 82.
Granaries. *See* Agriculture, 82.
Graphometers. *See* Optical, &c., 76.
Grates. *See* Fuel, &c., 30.
Graving docks. *See* Harbours, &c., 77.
Gridirons for repairing ships. *See* Harbours, &c., 77.
Grinding grain, 78.
Grooming horses by machinery. *See* Brushing, 57.
Grubbers. *See* Agriculture, 81.
Guitars. *See* Music, &c., 26.
Gunboats. *See* Ship-building, 21.
Gunpowder. *See* Fire-arms, 10.
Gutta-percha. *See* India-rubber, 16.
Gutters. *See* Drains, 1; Roads, 35.
Gymnastics. *See* Medicine, &c., 25; Toys, 51.

H.

Habits. *See* Wearing apparel, 66.
Hair-brushing machinery. *See* Brushing, 57.
Hair cloth. *See* Weaving, 20.
Hair pins. *See* Needles, &c., 45.
Hammers, steam. *See* Iron and steel, 6; Steam engine, 49.
Hammocks. *See* Furniture, 39.
Harbours, &c., 77.
Harmoniums. *See* Music, &c., 26.
Harness. *See* Saddlery, 34.
Harps and harpsichords. *See* Music, &c., 26.
Harrows. *See* Agriculture, 81.
Harvesters. *See* Agriculture, 81.
Hassocks. *See* Furniture, 39.
Hat boxes. *See* Trunks, &c., 84.
Hats, hat bands, and hat boxes. *See* Wearing apparel, 65.
Haymakers. *See* Agriculture, 81.
Hay rakes. *See* Agriculture, 81.
Hay, stacking, packing, and cutting. *See* Agriculture, 82.
Head coverings. *See* Wearing apparel, 65.
Heating by electricity. *See* Electricity, 95.
Heckling machines. *See* Spinning, 28.
Heliography. *See* Photography, 19.
Helmets. *See* Fire-arms, &c., 10; Wearing apparel, 65.
Hides. *See* Skins, 55.
Hinges and hinge joints, 59.
Hoes. *See* Agriculture, 81.
Hoists. *See* Raising, &c., 31.

Hoists, steam. *See* Raising, &c., 31; Steam-engine, 49.
Hooks and eyes. *See* Wearing apparel, 68.
Hop cultivation. *See* Agriculture, 81.
Hops, drying and pocketing. *See* Agriculture, 82.
Horns. *See* Music, &c., 26.
Horse gear. *See* Agriculture, 82.
Horse medicines. *See* Farriery, 53.
Horse shoes and horse shoe nails. *See* Farriery, 53.
Hose pipes. *See* Fire engines, &c., 88.
Hosiery. *See* Wearing apparel, 66.
Hospitals. *See* Medicine, &c., 25.
Hot pressing. *See* Dressing, &c., 91.
Hulling, &c., grain. *See* Grinding grain, 78.
Hummellers. *See* Agriculture, 82.
Hydrants. *See* Hydraulics, 32.
Hydraulics, 32.
Hydrochloric acid. *See* Acids, 40.
Hydrocyanic acid. *See* Acids, 40.
Hydrogen. *See* Acids, &c., 40.
Hydro-propulsion. *See* Marine propulsion, 5.
Hygrometers. *See* Optical, &c. 76.

I.

Ice creams. *See* Ice-making, &c., 85.
Ice houses, 85.
Ice-making machines, 85.
Ice pails. *See* Ice-making, &c., 85.
Ice safes, 85.
Ice wells. *See* Ice-making, &c., 85.
Igniting by electricity. *See* Electricity, 95.
India-rubber, 16.
India-rubber horse-shoes. *See* Farriery, 53.
Infusions, unconcentrated. *See* Unfermented beverages, &c., 86.
Ink and inkstands. *See* Writing, &c., 37.
Ink, printers'. *See* Printing, &c., 13.
Insulators. *See* Electricity, 15; 93.
Invalid bedsteads. *See* Medicine, &c., 25; Furniture, 39.
Iodine. *See* Acids, &c., 40.
Iron and steel, 6.
Iron oxides, &c. *See* Acids, &c., 40.
Ironing. *See* Dressing and finishing, &c., 91.
Irrigating and watering land. *See* Agriculture, 81.

J.

Jackets. *See* Wearing apparel, 66.
Jacks, hydraulic. *See* Hydraulics, 32.
Jacks, roasting. *See* Cooking, 61.
Jacks, screw. *See* Raising, &c., 31.
Jacquard machines. *See* Weaving, 20; Lace, 29;
Jewellery. *See* Wearing apparel, 68.

K.

Kaleidoscopes. *See* Optical, &c., 76.
Kamptulicon. *See* Artificial leather, &c., 80.
Keels, sliding. *See* Steering, 75.
Kegs. *See* Casks, 74.
Kettles for the table. *See* Unfermented beverages, &c., 86.
Kilns for drying hops, grain, &c. *See* Agriculture, 82.
Kilns. *See* Bricks and tiles, 22; Pottery, 24; Fuel, &c., 30.
Kites. *See* Aeronautics, 41; Toys, 51.
Knapsacks. *See* Fire-arms, &c., 10.
Kneading machines. *See* Cooking, &c., 61.
Knife cleaners. *See* Brushing, 57.
Knitting machines. *See* Lace, 29.
Knobs. *See* Furniture, &c., 39; Locks, 60.

L.

Labels. *See* Writing, &c., 37.
Lace-making, knitting, netting, &c., 29.
Lampblack. *See* Paints, 50.
Lamps, &c., 44.
Lamps, cooking. *See* Lamps, 44; Cooking, 61.
Lasts for making boots and shoes. *See* Wearing apparel, 67.
Latches. *See* Locks, &c., 60.
Launching vessels. *See* Ship-building, 21.
Lead. *See* Metals, &c., 18.
Lead for paints. *See* Paints, 50.
Lead, oxides, &c. *See* Acids, &c., 40.
Leather. *See* Skins, &c., 55.
Leather cloth. *See* Artificial leather, 80.
Lee boards. *See* Steering, &c., 75.
Leggings. *See* Wearing apparel, 66.
Lemonade. *See* Unfermented beverages, &c., 86.
Lemon and other fruit squeezers. *See* Unfermented beverages, &c., 86.
Lenses. *See* Optical, &c., 76.
Letterpress and similar printing, 13.
Levels. *See* Optical, &c., 76.
Lifts. *See* Raising, 31.
Lifts, steam. *See* Raising, 31; Steam engine, 49.
Light, electric, &c., 95.
Lighthouse lamps. *See* Lamps, 44.
Lighthouses. *See* Harbours, &c., 77.
Lighting mines. *See* Mining, 71.
Limbs, artificial. *See* Medicine, &c., 25.
Lime. *See* Acids, &c. 40.
Lime light. *See* Lamps, &c., 44.
Links. *See* Chains, &c. 90,
Linoleum. *See* Artificial leather, &c., 80.
Liqueurs. *See* Unfermented beverages, &c., 86.
Lithography. *See* Printing 13; Ornamenting paper. 12.
Loading hay, straw, &c. *See* Agriculture, 81.

Lockets. *See* Wearing apparel, 68.
Locks, &c., 60.
Locks, canal, &c. *See* Harbours, &c., 77.
Locks for guns. *See* Fire-arms, 10.
Locomotion, aids to, 7.
Locomotive steam carriages. *See* Steam engine, 49.
Logs. *See* Optical, &c., 76.
Looking-glasses. *See* Furniture, 39.
Looms. *See* Weaving, 20.
Looped fabrics. *See* Lace-making, &c., 29.
Lowering apparatus. *See* Raising, &c., 31.
Lozenges. *See* Medicine, 25; Cooking, 61.
Lubricants. *See* Oils, &c., 27.

M.

Machine needles. *See* Needles, 45.
Magic lanterns. *See* Toys, 51.
Magnesia. *See* Acids, &c., 40.
Magnesium. *See* Acids, &c., 40.
Magnetism. *See* Electricity, 15; 92; 93; 94; 95; 96; 97.
Malt mills. *See* Grinding grain, 78.
Manganese. *See* Acids, &c., 40.
Mangers. *See* Saddlery, &c., 34.
Mangling. *See* Dressing and finishing, &c., 91.
Manifold writers. *See* Writing, 37.
Manœuvring ships and vessels. *See* Steering, &c., 75.
Mantillas and mantles. *See* Wearing apparel, 66.
Manure, 3.
Manure distributors. *See* Agriculture, 81.
Marine engines. *See* Marine propulsion, 5; Steam engine, 49.
Marine propulsion, 5.
Mariners' compasses. *See* Optical, &c., 76.
Masts, &c., 73.
Mathematical instruments. *See* Artists' instruments, 54; Optical, &c., 76.
Mattresses. *See* Furniture. 39.
Measuring and mixing grain. *See* Agriculture, 82.
Meat screens. *See* Cooking, 61.
Medicine, &c., 25.
Medicine, and medicated food for animals. *See* Farriery, 53.
Memorandum books. *See* Books, 43.
Mercury. *See* Acids, &c., 40.
Metals and alloys, 18.
Metals, plating, &c., 23.
Metals, separating. *See* Metals, &c., 18.
Meteorological instruments. *See* Optical, &c., 76.
Meters, gas. *See* Gas, 17.
Meters, water. *See* Hydraulics, 32.
Micrometers. *See* Optical, &c., 76.
Microscopes. *See* Optical, &c., 76.
Milking, &c., 72.
Millboard. *See* Paper, 11.
Mills, barley. *See* Grinding grain, 78.
Mills, coffee. *See* Grinding grain, 78.
Mills, flour. *See* Grinding grain, 78.
Mills, malt. *See* Grinding grain, 78.
Mills, paint. *See* Paints, 50.
Mills, sugar. *See* Sugar, 48.
Mills, water. *See* Hydraulics, 32; Grinding grain, 78.
Millstones. *See* Grinding grain, 78.
Millstones, balancing. *See* Grinding grain, 78.
Millstones, dressing, &c. *See* Grinding grain, 78.
Mincing machines. *See* Cooking, 61.
Mineral waters. *See* Unfermented beverages, &c., 86.
Miners' lamps. *See* Lamps, 44.
Mines, ventilating. *See* Ventilation, 52.
Mining, &c., 71.
Mittens. *See* Wearing apparel, 66.
Mordants. *See* Bleaching, &c., 14.
Motive power. *See* Hydraulics, 32; Steam engine, 49; Air and gas engines, 62.
Moulds, sugar. *See* Sugar, 48.
Mowers. *See* Agriculture, 81.
Muffs. *See* Wearing apparel, 66.
Mules. *See* Spinning, 28.
Muriatic acid. *See* Acids, 40.
Music and musical instruments, 26.
Music stands. *See* Music, &c., 26.

N.

Nails, &c., 58.
Nails, horse-shoe. *See* Farriery, 53; Nails, 58.
Nautical instruments. *See* Optical, &c., 76.
Necklaces and necklets. *See* Wearing apparel, 68.
Neckties. *See* Wearing apparel, 66.
Needle cases. *See* Sewing, 2.
Needles and pins, 45.
Needles for knitting. *See* Lace-making, &c., 29.
Net, bobbin. *See* Lace-making. &c., 29.
Nets, fishing. *See* Lace-making, &c., 29.
Nickel. *See* Metals, &c., 18; Acids, &c., 40.
Nitre. *See* Acids, &c., 40.
Nitric acid. *See* Acids, 40.
Nitrogen. *See* Acids, &c., 40.
Nosebags. *See* Saddlery, 34.
Nuts. *See* Nails, &c., 58.

O.

Oars. *See* Marine propulsion, 5.
Oat mills. *See* Agriculture, 82.
Oats, thrashing, cleansing, drying, storing, &c. *See* Agriculture, 82.
Octants. *See* Optical, &c., 76.
Oilcloth, 80.
Oils, &c., 27.
Oilskin, 80.
Optical, &c., instruments, 76.
Ordnance. *See* Fire-arms, 10.

Organs. *See* Music, &c., 26.
Ovens. *See* Fuel, &c., 30.
Ovens, bakers'. *See* Fuel, &c., 30; Cooking, 61.
Overalls. *See* Wearing apparel, 66.
Overcoats. *See* Wearing apparel, 66.
Overshoes. *See* Wearing apparel, 67.
Oxalic acid. *See* Acids, 40.
Oxides. *See* Acids, &c., 40.
Oxygen. *See* Acids, &c., 40.

P.

Packing cases. *See* Trunks, &c., 84.
Packing fabrics. *See* Dressing and finishing, 91.
Packing for pistons of steam engines. *See* Steam engine, 49.
Paddle-wheels. *See* Marine propulsion, 5.
Paints, &c., 50.
Paints for artists. *See* Artists' instruments, &c., 54.
Pantaloons. *See* Wearing apparel, 66.
Paper, cutting, folding, and ornamenting, 12.
Paper making, 11.
Paperhangings. *See* Ornamenting paper, 12.
Papier maché. *See* Paper, 11.
Parachutes. *See* Aeronautics, 41.
Parasols. *See* Umbrellas, 47.
Pasteboard. *See* Paper making, 11; Cutting, &c., paper, 12.
Pattens. *See* Wearing apparel, 67.
Paving. *See* Roads, 35.
Peat. *See* Fuel, &c., 30.
Pedometers. *See* Optical, &c., 76.
Pencil cases and holders. *See* Writing, &c., 37; Artists' instruments, 54.
Pencil cases, boxes to hold leads for. *See* Writing, &c., 37.
Pens and penholders. *See* Writing, &c., 37; Artists' instruments, 54.
Pens, boxes for holding. *See* Writing, &c., 37.
Pepper, hulling. *See* Grinding grain, 78.
Perforating paper. *See* Cutting, &c., paper, 12.
Perpetual motion. *See* Hydraulics, 32; Air, &c., engines, 62.
Petticoats. *See* Wearing apparel, 66.
Phenakistoscopes. *See* Photography, 19; Optical, &c., 76.
Phenic acid. *See* Acids, 40.
Philosophical instruments. *See* Optical, &c., 76.
Phosphoric acid. *See* Acids, 40.
Phosphorus. *See* Acids, &c., 40.
Photography, 19.
Pianofortes. *See* Music, &c., 26.
Picture frames. *See* Furniture, 39.
Piers. *See* Harbours, &c., 77.
Pile drivers, steam. *See* Steam engine, 49; Harbours, &c., 77.
Pile fabrics. *See* Weaving, 20; Lacemaking, 29.
Pile or nap, raising and cutting. *See* Dressing, &c., 91.
Piles. *See* Harbours, &c., 77.
Pins. *See* Needles, &c., 45.
Pipes. *See* Tobacco, 42.
Pipes, drain. *See* Drains, 1.
Pipes, metallic, 70.
Pistols. *See* Fire-arms, 10.
Pistons of steam engines. *See* Steam engine, 49.
Pit chains. *See* Mining, &c., 71.
Plaiting. *See* Lace, &c., 29.
Plating metals, 23.
Playing cards, *See* Toys, 51.
Ploughs and ploughing machines. *See* Agriculture, 81.
Plumb levels. *See* Optical, &c., 76.
Pocket books. *See* Books, 43.
Porcelain. *See* Pottery, 24.
Portfolios. *See* Books, 43.
Portfolios for music. *See* Music, 26.
Portmanteaus. *See* Trunks, &c., 84.
Potash. *See* Acids, &c., 40.
Potash water. *See* Unfermented beverages, &c., 86.
Potassium. *See* Acids, &c., 40.
Potato diggers. *See* Agriculture, 81.
Pottery, 24.
Pouches for tobacco. *See* Tobacco, 42.
Powder flasks. *See* Fire-arms, &c., 10.
Power looms. *See* Weaving, 20.
Precious stones, cutting, &c. *See* Wearing apparel, 68.
Precious stones, setting. *See* Wearing apparel, 68.
Presses, hydraulic. *See* Hydraulics, 32.
Presses, printing, 13.
Presses, stamping. *See* Cutting, &c. paper, 12; Letterpress printing, 13.
Pressing fabrics. *See* Dressing and finishing, 91.
Printing fabrics, yarns, &c. *See* Bleaching, &c., 14.
Printing, letterpress, &c., 13.
Projectiles. *See* Fire-arms, &c., 10.
Propellers. *See* Marine propulsion, 5.
Propulsion, marine, 5.
Prussic acid. *See* Acids, 40.
Puddling furnaces. *See* Iron and steel, 6; Fuel, &c., 30.
Pug mills. *See* Bricks and tiles, 22.
Pulleys. *See* Raising, &c., 31.
Pulverizers. *See* Agriculture, 81.
Pumps. *See* Hydraulics, 32.
Pumps, steam. *See* Hydraulics, 32; Steam engine, 49.
Punkas. *See* Ventilation, 52.
Purifying and filtering water, 79.
Pyrometers. *See* Optical, &c., 76.

Q.

Quadrants. *See* Optical, &c., 76.
Quarrying. *See* Mining, &c., 71.
Quays. *See* Harbours, &c., 77
Quinine. *See* Acids, &c., 40.

R.

Rafts. *See* Ship-building, 21.
Railway carriages. *See* Carriages, &c., for railways, 46.
Railway signals, &c., 38.
Railways, 33.
Raising, &c., 31.
Raising and lowering ships' boats. *See* Raising, &c., 31; Masts, &c., 73.
Raising ships for repairing. *See* Ship-building, &c., 21.
Raising water. *See* Hydraulics, 32.
Rakes. *See* Agriculture, 81.
Ranges, cooking. *See* Fuel, &c., 30; Cooking, 61.
Reaping and mowing machines. *See* Agriculture, 81.
Reflectors. *See* Lamps, 44.
Refrigerators. *See* Ice-making, &c., 85.
Reservoirs. *See* Harbours, &c., 77.
Respirators. *See* Medicine, &c., 25.
Reticules. *See* Trunks, &c., 84.
Retorts for burning animal charcoal. *See* Sugar, 48.
Retorts, gas. *See* Gas, 17.
Reverberatory furnaces. *See* Iron and steel, 6: Fuel, &c., 30.
Rice, hulling, &c. *See* Grinding grain, 78.
Rice, milling, polishing, and otherwise preparing for the market. *See* Agriculture, 82.
Rick covers. *See* Artificial leather, &c., 80.
Ricks. *See* Agriculture, 82.
Riddles for grain, &c. *See* Agriculture, 82.
Rigging. *See* Masts, &c., 73.
Rings, finger. *See* Wearing apparel, 68.
Rinsing. *See* Washing, &c., 89.
Rivets. *See* Nails, &c, 58.
Road sweepers. *See* Brushing, 57.
Roads and ways, 35.
Roasting jacks. *See* Cooking, 61.
Rockets. *See* Fire-arms, &c., 10.
Rocking chairs and horses. *See* Toys, 51.
Rollers for calico printing. *See* Bleaching, &c. 14.
Rollers for roads. *See* Roads, &c., 35.
Rollers, land. *See* Agriculture, 81.
Roots, cutting, slicing, pulping, washing, drying, and sorting. *See* Agriculture, 82.
Ropes and bands for mines. *See* Mining, 71.
Roughing horses. *See* Farriery, 53.
Rudders. *See* Steering, 75.
Ruffles and ruffs. *See* Wearing apparel, 66.
Rulers and ruling machines. *See* Writing, 37; Artists' instruments, 54.

S.

Sacks. *See* Weaving, 20.
Saddlery, &c., 34.
Safes, &c., 64.
Safety lamps. *See* Lamps, 44.
Safety pockets. *See* Wearing apparel, 68.
Safety valves of steam boilers. *See* Steam engine, 49.
Sails. *See* Masts, &c., 73.
Salt, common. *See* Acids, &c., 40.
Saltpetre. *See* Acids, &c., 40.
Salts. *See* Acids, &c., 40.
Salt water, obtaining freshwater from. *See* Purifying &c., water, 79.
Scales. *See* Raising, &c., 31.
Scarifiers. *See* Agriculture, 81.
Screening grain, &c. *See* Agriculture, 82.
Screens. *See* Furniture, 39.
Screw propellers for carriages and agricultural implements. *See* Aids to locomotion, 7.
Screw propellers for ships. *See* Marine propulsion, 5.
Screws. *See* Nails, &c., 58.
Scythes. *See* Agriculture, 81.
Sealing wax. *See* Writing, &c., 37.
Sea walls. *See* Harbours, &c., 77.
Seed sowing. *See* Agriculture, 81.
Seltzer water. *See* Unfermented beverages, &c., 86.
Semaphore signals. *See* Railway signals, 38.
Sewage farming. *See* Agriculture, 81.
Sewers. *See* Drains, &c., 1.
Sewers, ventilating. *See* Ventilation, 52.
Sewing, &c., 2.
Sextants. *See* Optical, &c., 76.
Shackles. *See* Chains, &c., 90.
Shades. *See* Lamps, 44.
Shakos. *See* Fire-arms, &c., 10; Wearing apparel, 65.
Shaving brushes. *See* Brushing, 57.
Shawl pins. *See* Wearing apparel, 68.
Shawls. *See* Wearing apparel, 66.
Shawls, weaving. *See* Weaving, 20.
Shear legs. *See* Raising, &c., 31.
Shearing fabrics. *See* Dressing, &c., 91.
Shearing sheep. *See* Farriery, &c., 53.
Sheathing metals. *See* Metals, &c, 18.
Sheep washes, dips, &c. *See* Farriery, &c., 53.
Ship-building, &c., 21.
Ship lamps and lanterns. *See* Lamps, 44.
Ships, steering and manœuvring. *See* Steering, 75.
Ships, ventilating. *See* Ventilation, 52.
Shirts. *See* Wearing apparel, 66.
Shoes. *See* Wearing apparel, 67.
Sickles and reaping hooks. *See* Agriculture, 81.
Signal lamps. *See* Lamps, 44.
Signals. *See* Electricity, 15; 94; Railway signals, 38.
Silicic acid. *See* Acids, 40.
Silver. *See* Metals, &c., 18; Acids, &c., 40.
Singeing fabrics. *See* Dressing, &c., 91.
Singeing horses. *See* Saddlery, &c. 34; Farriery, 53.

Siphons. *See* Hydraulics, 32; Preparing, &c., cork, 56.
Sizing machines. *See* Weaving, 20.
Skates. *See* Toys, 51.
Skins, &c., 55.
Skirts. *See* Wearing apparel, 66.
Sleeve links. *See* Wearing apparel, 68.
Slide rules. *See* Optical, &c., 76.
Slippers. *See* Wearing apparel, 67.
Slips. *See* Harbours, &c., 77.
Sluices. *See* Harbours, &c., 77.
Smelting furnaces. *See* Iron and steel, 6; Metals, &c., 18; Fuel, &c., 30.
Smutters. *See* Agriculture, 82.
Snuff and snuff boxes. *See* Tobacco, 42.
Soap. *See* Oils, &c., 27.
Socks. *See* Wearing apparel, 66.
Soda. *See* Acids, &c., 40.
Soda water. *See* Unfermented beverages, &c., 86.
Sodium. *See* Acids, &c., 40.
Solitaires. *See* Wearing apparel, 68.
Sounding apparatus. *See* Optical, &c., 76.
Spectacles. *See* Optical, &c., 76.
Spectroscopes. *See* Optical, &c., 76.
Spinning, 28.
Spirit levels. *See* Optical, &c., 76.
Spittoons. *See* Tobacco, &c., 42.
Spontaneous combustion, preventing. *See* Fire engines, &c., 88.
Spring balances. *See* Raising, &c., 31.
Springs for railway carriages. *See* Carriages, &c., for railways, 46.
Spurs. *See* Saddlery, &c., 34.
Stable brushes. *See* Brushing, 57.
Stable fittings. *See* Saddlery, &c., 34.
Stacks and stackers. *See* Agriculture, 82.
Stands for casks. *See* Casks, 74.
Stands for music. *See* Music, &c., 26.
Stannates. *See* Acids, &c., 40.
Stationery. *See* Paper making, 11; Cutting, folding, &c., 12; Writing, &c., 37.
Staves, cutting, shaping, &c. *See* Casks, 74.
Stay fastenings. *See* Wearing apparel, 68.
Stays. *See* Wearing apparel, 66.
Steam boilers. *See* Steam engine, 49.
Steam culture, 8.
Steam engine, 49.
Steam gauges. *See* Steam engine, 49.
Steam rams. *See* Ship-building, 21.
Steel. *See* Iron, &c., 6.
Steelyards. *See* Raising, &c., 31.
Steering ships and vessels, 75.
Stencil plates. *See* Printing, 13.
Stereoscopes. *See* Optical, &c., 76.
Stereotype. *See* Letterpress printing, 13.
Stirrups. *See* Saddlery, &c., 34.
Stocking fabrics. *See* Lace-making, 29.
Stocking frames. *See* Lace-making, &c., 29.
Stockings *See* Wearing apparel, 66.
Stockings, elastic. *See* Medicine, &c., 25.
Stone breakers. *See* Roads, 35.
Stoneware. *See* Pottery, 24.
Stools, music. *See* Music, 26.
Stoppers. *See* Preparing, &c., cork, 56.
Stored goods, ventilating to prevent spontaneous combustion. *See* Fire engines, &c., 88.
Storing grain, &c. *See* Agriculture, 82.
Stoves. *See* Fuel, &c., 30.
Straw elevators. *See* Agriculture, 82.
Straw plait. *See* Lace-making, &c., 29.
Strong rooms. *See* Safes, &c., 64.
Strontia. *See* Acids, &c., 40.
Strontium. *See* Acids, &c., 40.
Studs. *See* Wearing Apparel, 68.
Submarine cables. *See* Electricity, &c., 15; 93.
Sugar, 48.
Sulphur and sulphuric acid. *See* Acids, &c., 40.
Sun dials. *See* Optical, &c., 76.
Surgery. *See* Medicine, &c., 25.
Surgery for animals. *See* Farriery, &c., 53.
Surgical instruments. *See* Medicine, &c., 25.
Surveying instruments. *See* Optical, &c., 76.
Suspension bridges. *See* Bridges, 36.
Sweeping. *See* Brushing, &c., 57.
Sweeping chimneys. *See* Fuel, &c., 30.
Sweeping roads. *See* Roads, &c., 35.
Swings. *See* Toys, 51.
Swivel links and swivel hooks. *See* Chains, &c., 90.
Swivels and swivel rings. *See* Wearing apparel, 68.
Swords. *See* Fire-arms, &c., 10.
Syringes. *See* Hydraulics, 32.
Syringes, surgical. *See* Medicine, &c., 25.

T.

Tables. *See* Furniture, 39.
Tags for laces. *See* Wearing apparel, 68.
Tailors' irons. *See* Wearing apparel. 66.
Tannic acid. *See* Acids, 40.
Tanning leather. *See* Skins, 55.
Targets. *See* Fire-arms, &c., 10.
Tarpaulin. *See* Artificial leather, &c., 80.
Tartaric acid. *See* Acids, 40.
Tea, concentrated extracts of. *See* Tea, &c., 87.
Tea, manufacturing and preparing for sale. *See* Tea, &c., 87.
Tea, preparing as a drink. *See* Unfermented beverages, &c., 86.
Teasles. *See* Dressing, &c., 91.
Teeth, artificial. *See* Medicine, &c., 25.
Telegraphs, electric. *See* Electricity, 15; 93; 94.
Telescopes. *See* Optical, &c., 76.
Tent covers. *See* Artificial leather, &c., 80.

Testing chains. *See* Chains, &c., 90.
Theodolites. *See* Optical, &c., 76.
Thermometers. *See* Optical, &c., 76.
Thimble. *See* Sewing, 2.
Thrashing machines. *See* Agriculture, 82.
Throstles. *See* Spinning, 28.
Tiles. *See* Drains, &c., 1; Bricks, &c., 22.
Tilling land. *See* Agriculture, 81.
Tills. *See* Safes, &c., 64.
Tin. *See* Metals, &c., 18; Acids, &c., 40.
Tinning. *See* Plating or coating Metals, 23.
Tips, boot and shoe. *See* Wearing apparel, 67.
Tobacco, 42.
Toilet boxes. *See* Trunks, &c., 84.
Tooth brushes. *See* Brushing, 57.
Tops. *See* Toys, 51.
Torpedo boats. *See* Ship-building, 21.
Toys, &c., 51.
Tracing cloth and paper. *See* Artists' instruments, &c., 54.
Traction engines. *See* Steam engine, 49.
Traction ropes. *See* Agriculture. 81.
Travelling bags. *See* Trunks, &c., 84.
Trees, boot and shoe. *See* Wearing apparel, 67.
Troughs for washing. *See* Washing, &c., 89.
Trouser strap fastenings. *See* Wearing apparel, 68.
Trousers. *See* Wearing apparel, 66.
Trunks, &c., 84.
Tube brushes. *See* Brushing, 57.
Tubes, metallic. *See* Metallic pipes, 70.
Tubs, washing. *See* Washing machines, &c., 89.
Tungstic acid. *See* Acids, 40.
Tunnelling. *See* Mining, &c., 71.
Turbines. *See* Hydraulics, 32.
Turf cutters. *See* Agriculture, 81.
Turnip cutters. *See* Agriculture, 82.
Tuyeres. *See* Fuel, &c., 30.
Type. *See* Letterpress printing, 13.

U.

Umbrellas, &c., 47.
Unfermented beverages, 86.
Unions for tubes. *See* Metallic pipes, 70.
Upholstery. *See* Furniture, 39.
Urinals. *See* Waterclosets, &c., 63.
Urns for tea, &c. *See* Unfermented beverages, &c., 86.

V.

Vacuum pans for sugar. *See* Sugar, 48.
Valises. *See* Trunks, &c., 84.
Valves, air. *See* Ventilation, 52.
Valves, gas. *See* Gas, 17.
Valves, steam. *See* Steam engine, 46.
Valves, water. *See* Hydraulics 32.
Valves, watercloset. *See* Waterclosets, 63.
Varnish, boot and shoe. *See* Wearing apparel, 67.
Varnishes. *See* Paints, &c., 50.
Vehicles, ventilating. *See* Ventilation, 52.
Vent pegs and spiles. *See* Preparing and cutting cork, &c., 56.
Ventilating mines. *See* Ventilation, 52; Mining, 71.
Ventilating railway carriages. *See* Carriages, &c., for railways, 46; Ventilation, 52.
Ventilation, 52.
Vermin on animals, destroying. *See* Farriery, 53.
Veterinary art. *See* Farriery, 53.
Viaducts. *See* Bridges, &c., 36.
Vinegar. *See* Acids, &c., 40.
Violins. *See* Music, &c., 26.
Vitriol. *See* Acids, &c., 40.

W.

Wadding. *See* Dressing and finishing, &c., 91.
Wafers. *See* Writing, &c., 37.
Waggon covers. *See* Artificial leather, &c., 80.
Waggons, railway. *See* Carriages, &c., for railways, 46.
Waistcoats. *See* Wearing apparel, 66.
Walking-sticks. *See* Umbrellas, &c., 47.
Wallets. *See* Trunks, &c., 84.
Wardrobes. *See* Furniture, 39.
Warping land. *See* Agriculture, 81.
Warping machines. *See* Weaving, 20.
Warp machines or frames. *See* Lace-making, &c., 29.
Washing and sifting ores. *See* Metals, &c., 18.
Washing clothes, &c. *See* Washing machines, &c., 89.
Watches, &c., 9.
Watch protectors. *See* Wearing apparel, 68.
Water aerating. *See* Purifying, &c., water, 79.
Water, chemical treatment of. *See* Purifying, &c., water, 79.
Waterclosets, &c., 63.
Watercourses. *See* Harbours, &c., 77.
Watering land. *See* Agriculture, 81.
Watering roads. *See* Roads, 35.
Water meters. *See* Hydraulics, 32.
Waterproof fabrics, 80.
Waterproofing leather. *See* Skins, &c., 55.
Water, purifying and filtering, 79.
Wearing apparel,—body coverings, 66.
Wearing apparel,—dress fastenings and jewellery, 68.
Wearing apparel,—foot coverings, 67.
Wearing apparel,—head coverings, 65.

Weaving, 20.
Weighing. *See* Raising, &c., 31.
Well-sinking. *See* Mining, &c., 71.
Wet docks. *See* Harbours, &c., 77.
Wharves. *See* Harbours, &c., 77.
Wheat, thrashing, cleansing, drying, storing, &c. *See* Agriculture, 82.
Wheels, railway. *See* Carriages, &c., for railways, 46.
Whips and whip sockets. *See* Saddlery, &c., 34.
Whistles. *See* Railway signals, 38.
Wicks. *See* Lamps, &c., 44.
Winding drums. *See* Raising, &c. 31; Mining, 71; Agriculture, 81.
Winding fabrics. *See* Dressing, &c., 91.
Windlasses. *See* Raising, &c., 31.
Windlasses, steam. *See* Raising, &c., 31; Steam engine, 49.
Windmills. *See* Air, &c., engines, 62.
Windmills used to propel ships. *See* Marine Propulsion, 5; Masts, &c., 73.
Window fastenings. *See* Locks, &c., 60.
Wine coolers. *See* Ice-making, &c., 85.
Winnowing machines for grain, &c. *See* Agriculture, 82.
Wire brushes. *See* Brushing, 57.
Wood paving. *See* Roads, 35.
Work bags and work boxes. *See* Trunks, &c., 84.
Wringing. *See* Washing, &c., 89.
Wristbands. *See* Wearing apparel, 66.
Writing instruments, &c., 37.

Z.

Zinc. *See* Metals, &c., 18.
Zinc for paint. *See* Paints, 50.
Zinc oxides, &c. *See* Acids, &c., 40.

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